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No.19 October 95p *Byte High, No Limit*

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EXPLOSIVE REVIEW
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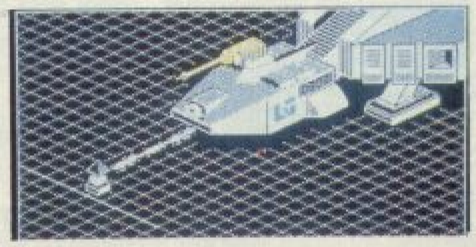
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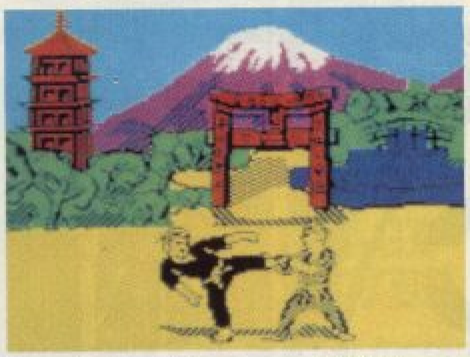
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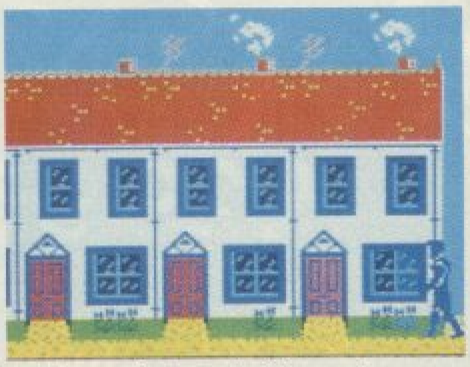
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MEGAGAME



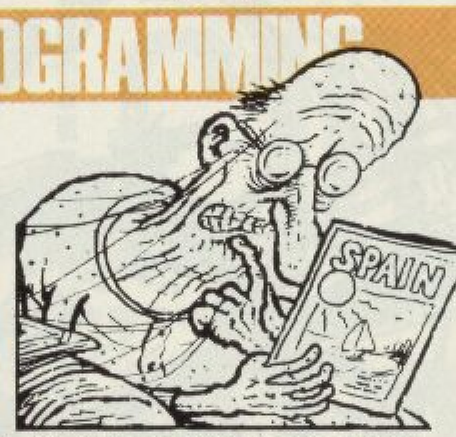
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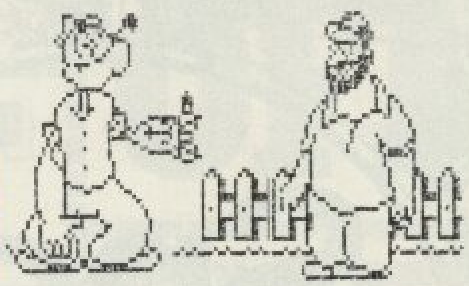




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Please do not post anything to *Your Spectrum* — we cannot deal with your orders here.

WHSmith VOUCHER

This voucher is valid towards the cost of a CCR700 computer compatible cassette recorder, subject to availability.

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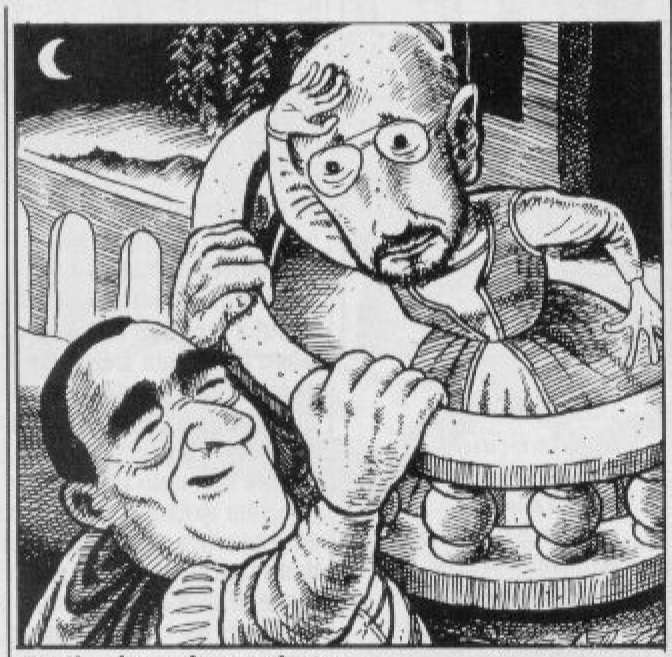
The price is inclusive of VAT and p&p.
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Now send your order, payment and address to Evesham Micro Centre, Bridge Street, Evesham, Worcestershire.
Offer ends 30th October 1985.

FRONTLINES

Has *Maxwell*'s silver hammer fallen? Are you for the chopper? Have you set your sights on a *Gunshot*? Will you be completely *MUD*dled? How magic is *Wizard*? Whose *Zoid* are you on anyway? Find out in *Frontlines!*

DOUBLE DEALING

So, Sir Clive won't be going to live at Maxwell House after all. Just before the wedding, Robert Maxwell pulled out of the £12 million deal designed to rescue Sinclair Research and left Sir Clive standing at the altar.



Parting is such sweet sorrow ...

A spokesperson for Mr Maxwell's company Hollis told us, "As a culmination of our investigations the company directors, including Mr Maxwell, decided not to recommend the deal to our shareholders." Well, if Sinclair Research was in poor shape before, think what a state it was in afterwards!

It was at this stage that the jilted bride mounted a face-saving exercise. Sir Clive persuaded Dixons to publicise a deal that had been signed between the two companies a full ten days before the Maxwell pull-out. The deal, said to be worth £10 million, means that Dixons takes on a 'very considerable' number of unsold Spectrums. That way Sinclair's remaining stocks won't be knocked down at give-away prices but bundled into budget deals with other products that aren't shifting, like the pocket telly.

In return, Sinclair has had to delay the launch of the new 128K Spectrum, code-named the Derby. That's right, it exists, it will have the AY8192 sound chip and should be fully compatible with the 48K Spectrum — though some people have cast doubt on whether that's possible for 100 per cent of programs. Our source tells us that the contract with Dixons expressly forbids the sale of the Derby in this country before Christmas. And though Dixons refused to confirm this, it seems unlikely they'd welcome any moves from Sinclair that would hinder their off-loading of 48K Speccies. You will, however, be able to pick up the new machine in Europe where it won't put the kibosh on the Dixons' deal.

And what has Sinclair Research got to say about all this then? "We can't comment on a hypothetical machine," said a spokesperson. We shall see!

THE ULTIMATE QUESTION

Ultimate has announced the immiment release of two new games, *Nightshade* and *Pentagram*. It looks likely that they'll be using 3D animation techniques in the tradition started by *Knightlore*.

But one other tradition remains, too. Ultimate remains stubbornly stumm about either game. If you reckon you'll be more successful at extricating information, give 'em a call on (0530) 411485.

GO FOR YOUR GUNSHOT



Has Vulcan come a 'gunnin' for you!

We're into grabbing bargains on *YS*, so here's news of a package that should spare the pocket and be a joy to behold. Vulcan Electronics has parcelled up its ever-popular Gunshot joysticks with the appropriate interfaces and priced the whole shebang at £10.95

Included in the price comes a book of concise instructions and a twelve month guarantee. If you think you can handle the idea, then contact Vulcan on 01-871 1136.

SHADOW OF THE ROM

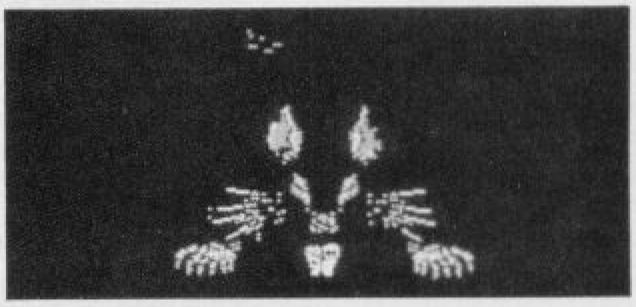


Mikro-Plus — refreshes the parts other programs cannot reach.

Book begat play begat film begat song begat software — isn't that the way it's supposed to be? Well, Mikro-Gen's got other ideas 'cos their new game's turned the world on its head and commissioned a novel to be written about their new game, *Shadow of the Unicorn.*

Even more revolutionary — if you care to forget Imagine's abortive attempt at the same thing (*Imagine, I've forgotten them already. Ed*) — is the new piece of micro-gadgetry you'll need to play the game. It's called the Mikro-Plus and it contains a ROM with 16K of the game burnt in. And as it overlays the current Speccy ROM area, the programmers are free to use the full 64K of the Speccy's memory. The Mikro-Plus looks set to do for software what acorns do for oak trees — no, not fall off!

The complete package is ready to roll at £14.95 but Mikro-Gen will dole out more info over the phone. Call the Wallies there on (0344) 427317.



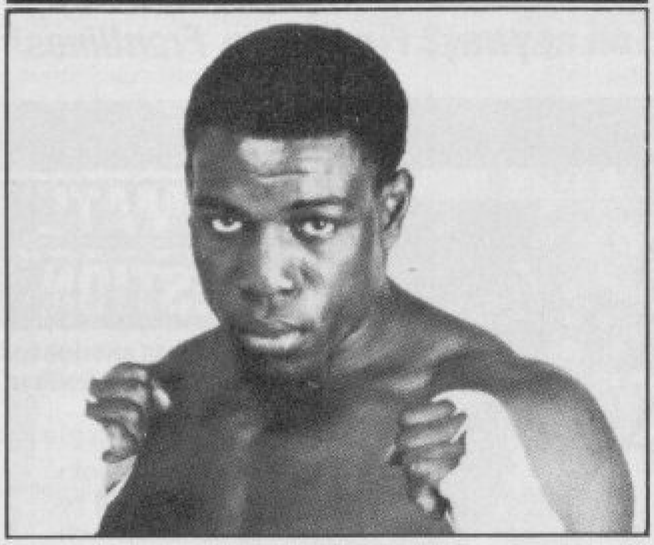
Beware, it's a rat-trap! And if you ratbags enjoy sitting up to the wee small hours with only ghouls and gremlins for company, then you'll love *The Rats*.

Based on James Herbert's novel of the same name, this horror-tail (groan) is set on the rat-infested streets of London. It's all blood guts'n'gore as you play the rat-catcher out to trap the dirty rats.

If you fancy getting ratted (*Mmmm! Ed*), give Five Ways Software a ring on (0732) 450111.

FRONTLINES

BOX CLEVER



Who's not gonna enter my compo?

Now we know that you lot won't throw in the towel that easily, so we're offering you a real challenge. All you have to do is last two rounds in the ring with our Frank Bruno questions and a copy of Elite's knockout new game, *Frank Bruno's Boxing* could be coming your way.

Elite has generously stumped up fifty copies of the game to give away to the first *YS* readers to send in the correct answers to the following lightweight questions:

Frank Bruno was the youngest ever holder of which title? Was it:
a) The World Amateur Championship Title?
b) The British Amateur Championship Title?
c) The European Amateur Welly Throwing Title?

Since turning professional, Frank has fought twenty-six contests. How many has he won:
a) 23?
b) 27 ½?
c) 25?

Don't cower in the corner, sock those answers to us now. Write them on the back of an envelope or a postcard and send them to *Frank Bruno' Boxing* Compo, *Your Speccy*, 14 Rathbone Place, London W1P 1DE. It's a knockout!

FAST PAST THE POST

The Copyright Amendment Bill, tagged the FAST Bill after the Federation Against Software Theft which pushed for it, has finally cut through the red-tape and become law.

Up till now the only way to stop the pirates was to nab them under the music or literary copyright acts — software didn't have its own protection. Now though, they can be stung for £2,000 and imprisoned for a maximum of two years.

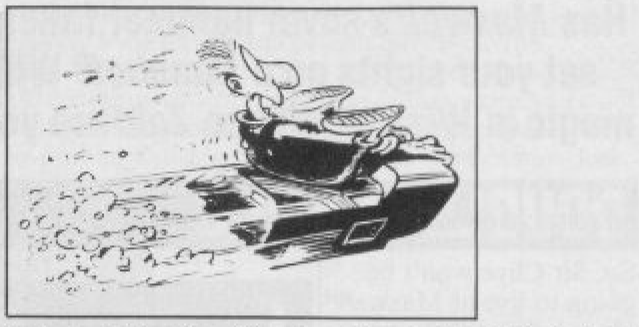
UP, UP AND AWAY!



Remember way back in *YS* 16, we asked you to try your luck and 'Fly Virgin, with our super-soaraway Chopper Patrol compo?' Well, now's the time to fasten your safety belts and sit tight to hear about the lucky winners!

The trio of high flyers that spotted the 11 differences, and were first out of the hat are **Thomas Greenbank** of Haslingfield, Cambridgeshire, **Simon Kinder** of Huddersfield, and **K O Fenton** of Sleaford, Lincs. They'll be flying over London for an hour in a 4-seater Jet Ranger helicopter, winging their way from Battersea right over the Thames, with a birds-eye view of St. Paul's, The Houses of Parliament and a host of other famous sights! Virgin will also see them right as far as lunch and travelling expenses are concerned! What a treat eh?

As if that wasn't enough, Virgin's generosity stretches to ten *more* lucky *YS* readers, who'll each receive a runners-up prize of a Virgin T-shirt and bag, Virgin calculator and a copy of their game *Strangeloop*! These will go out to, **G Moor** of Orton Goldhay, **M W Wabe** of Edinburgh, **Chris Hall** of Belfast, **Mrs M Whitehouse** (not that one!) of Tividale, **Simon Kain** of Prestatyn, **Paulo Jorge Sousa** of Portugal, **Liam Holt** of Richmond Surrey, **Jacek Krzeski** of London 4JB, **Alan Paton** of Trowbridge and finally **Clive Viagas** of Gibraltar. Look out for those surprises flying through your letterboxes soon! Chocs away, chaps and chapesses.



M/CRODR/V/N'

Hello microdrivers! Welcome to our new, regular column which will hopefully be sorting out a whole lot of microdrive problems and queries for you.

I'll kick off with a letter from **Jeff Webb** who's asking about a program that caused a 'Nonsense in BASIC' error when it shouldn't. Basically Jeff, the program LOADed another program from a drive, and when it had loaded it, the machine stopped with the error. Well, this isn't too serious — it's all down to a buglet in the ROM that affects non-auto running programs. If one running program executes a LOAD command, and loads a non-auto running program, the shadow ROM doesn't tidy things up as it should, and tries to interpret a random piece of your new program. It then gets confused, and produces the error message. Unfortunately, there's no simple cure, apart from the obvious — make all your programs auto run if you use other BASIC programs to load them.

As you should know, cartridges work well if they're treated with respect. Sometimes though, if your system goes beserk, you don't know what to do for the best! A common problem is for a cartridge to go round forever, with Break disabled. This can be caused by a program error, or by the notorious 'low memory' bug in the ROM, and if you make the wrong move, you can ruin the cartridge. The best solution is to cause a Z80 reset — so the Spectrum goes back to the copyright message, then enter STOP as a direct comand. This will stop the motor, hopefully without damage to the cartridge. A suitable reset switch as standard on the Spectrum+, and various ones are available for the Spectrum, but it must be a 'real' interrupt switch. Those which simply interrupt the power supply won't work, and are likely to damage the tape because of the power surge. It's actually safer to remove a cartridge from a drive with the motor on than it is with it off, just so long as you're quick!

Do you sometimes find a loop of tape hanging out when you pull a cartridge out of the drive? This is normally caused by the tape sticking magnetically to the head, and if you can keep yours . . . all can be saved! Grab something clean, like a pair of tweezers, or scrubbed fingers, and gently ease the tape back. If you get dirt, or grease on the tape, just give up otherwise you'll corrupt it. If you have a large loop of tape, don't be tempted to open up the cartridge and re-spool the tape. Believe me, human fingers were not made to tamper with this delicate mechanism.

A few months ago a few faulty cartridges slipped onto the market. Hopefully though, they'll all be out of circulation by the time you read this. If you are unlucky enough to get a faulty one, do yourself a favour and take it straight back to the shop. There is also a manufacturing error that gives unusual results — if you format a cartridge, and it stops with a 'Microdrive not present' error in the middle of the format, it means you're very priveleged! You are the angry owner of one of a few cartridges produced with oxide on the wrong side of the tape! Normally, a faulty cartridge shows up by failing to load or verify, or making strange noises ending by producing the 'Not present' error.

That's it for our first outing but if you're having software problems with your Microdrives or Interface 1, or you've got some useful tips to share, drop me a line at Microdrivin' *Your Spectrum*, 14 Rathbone Place, London W1P 1DE. But please save your stamps and don't send an sae. I can't give replies. Let's be hearin' from you!

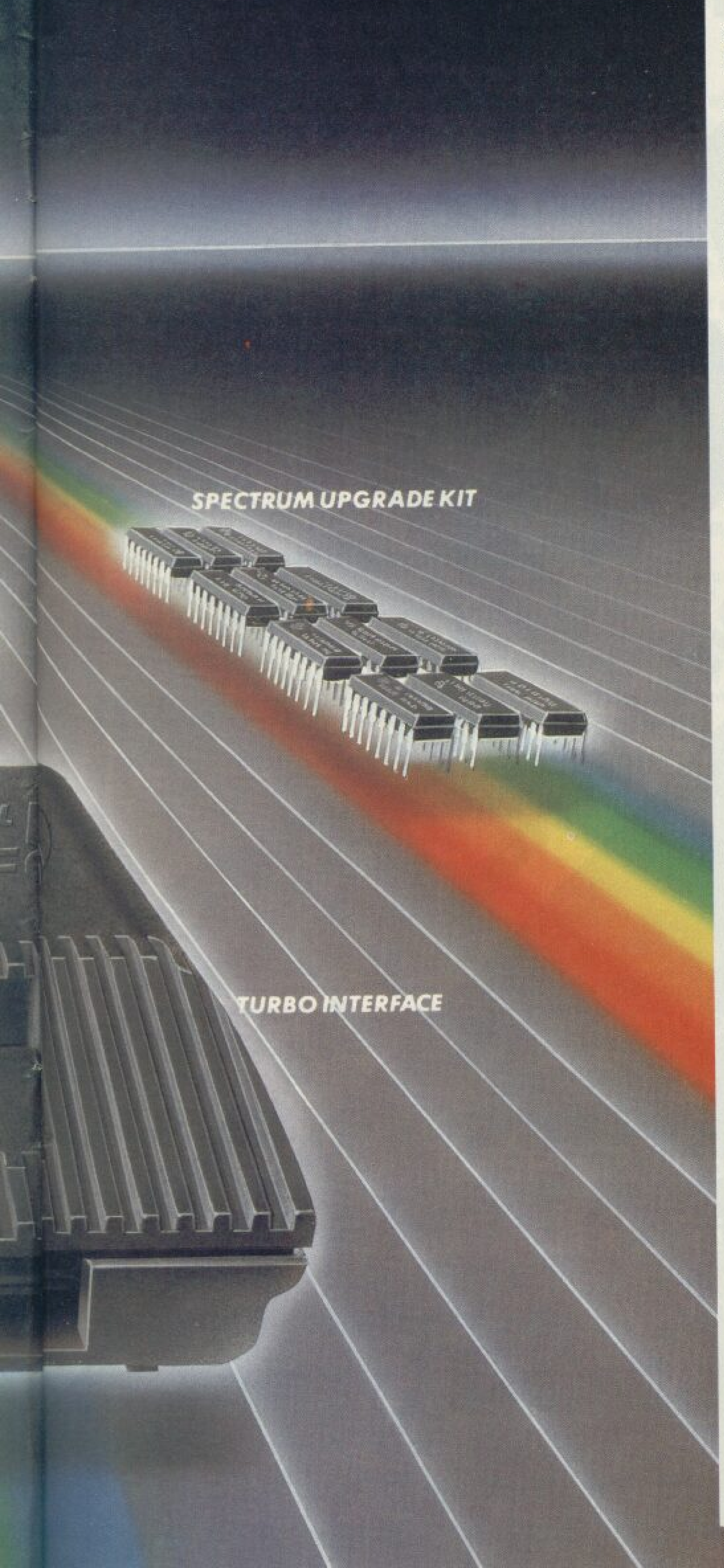
Andy Pennell


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We'll take you bey



ond the Spectrum.



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To: RAM Electronics (Fleet) Ltd (Dept YS), 106 Fleet Road, Fleet, Hampshire GU13 8PA.

Credit Card hot line: 02514 25252. (Access & Visa).

Please send me

_______ Spectrum Turbo Interface(s) at £22.95.

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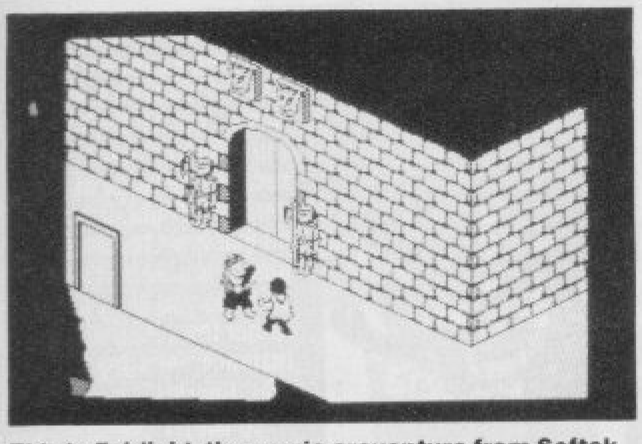
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All products are fully compatible with the Spectrum, Spectrum + and Sinclair Microdrives.

Ram Electronics (Fleet) Ltd (Dept YS), 106 Fleet Road, Fleet, Hampshire GU13 8PA.

Trade and export enquiries welcome



This is *Fairlight*, the newie arcventure from Softek that's written by the Swede with the name straight from the medieval sagas, Bo Jangeborg. The game's the usual saucy swordery stuff with an eighty room castle, a wizard, and a lost Book of Light. If you can't wait, Softek will shed more light if you ring 01-240 1422.

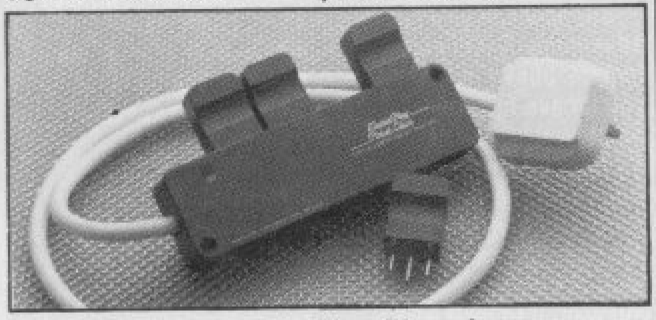
NU SENSATION

D'you scream every time the Hoover's turned on? Bite your fingernails to the bone when someone reaches for the light switch? What you need is a mains filter that's designed to stop your programs from disappearing down the little dot in the middle of the telly screen.

Nu-Way Styli Components reckons it's got the answer — called a Masterplug Powerclean, it has four outputs plus a filter to stop the spikes getting up the line. Not a pretty sight but still very handy, it should only set you back £16.99 for the non-fused model and £18.99 for the fused version.

Also from Nu-Way comes another black box that'll allow you to switch the aerial input to your TV from the video to the computer or whatever else you have. And for that you'll only have to fork out £8.32.

Keep your eyes open for both products in branches of John Menzies and your local hardware emporium. So, you learn something Nu every day ...



The Powerclean from Nu-Way. Plug, plug ...

BOND IS BACK

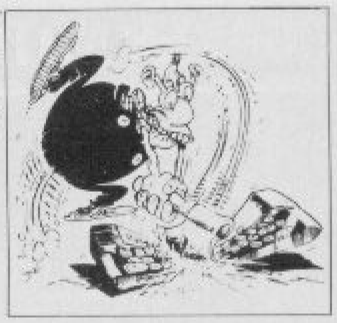
Meet the Interface 007. No, it's not an add-on to remove the bugs from *A View To Kill* but another one of those one-press transfer peripherals.

As with the Interface 3, there's no through connector so it'll have to be the last in the line of your peripherals but it does have a reset button to save that poor overworked power supply on the back of your Speccy. Also, you don't have to load in any software before it goes about its business.

It'll save programs to tape, with a choice of five different tape speeds, but a microdrive loader program is saved in the first program block so putting it back onto drive is a doddle — it's all done for you.

One drawback is that there's no case — the curcuit board is open to attack from coffee and paperclips! But at £29.95 it's cheaper than either the Interface 3 or the Mirage Microdriver, so you pays your money and takes your choice! For added info, interface with the people who produce it, ZX-Guaranteed on 061-766 5712.

HACKING AWAY



Prepare to POKE where you've never POKEd before! Don't hide your hacking hints — hurl them at Andy Pennell, Your Spectrum, 14 Rathbone Place, London W1P 1DE.

Hello to all you hacking hacks! Now's the time for your monthly dose of hacking hints. First let's take a look at the game of the TV show *Airwolf*. **M. Rai** has supplied a way of tunnelling into this one. You may have to dig hard, but it's worth it for such a high-flying game! Firstly, create some headers, so get a blank tape, then enter.

```
SAVE "aw1"CODE 24000,
41535
```

Save only the header to tape — stop recording during the gap before the main bit. Next, try it again with SAVE "aw2" CODE 23296, 256, again only saving the header. Now position the original *Airwolf* tape to the start of the long headerless code, the one after the screen, and do

```
10 CLEAR 23999: BORDER
0: LOAD ""CODE: LOAD""
CODE
```

Now RUN this, and play the first header you created, stopping the tape when it's done. Then, play the *Airwolf* tape, that is the long part. Be sharp, as you should catch the tape just as it finishes, as the next bit follows straight on. Next, play the second header you created and restart the Airwolf tape to load the small bit of code — at last it's all there! Now go on an' butcher it! Try these POKEs for starters. POKE 45982,0 for infinite lives, 58317,0 to stop gravity affecting the chopper, and 44665,0 to stop your Bonus decreasing. RANDOMIZE USR 59091 will start the game for you and after all that, it should be worth playing!

Everyone has to start hacking somewhere, and **Nige Bareham**'s first successful attempt got him into *Planetoids*, an early version of *Asteroids*. Here's what he did. Load the first program, stop the tape and reset the machine. Next, MERGE the second program, and insert POKE VAL "26744", NOT PI to stop the alien ships firing bombs, or POKE VAT "24373", NOT PI for a very different effect! (Exactly *what*, is a mystery!) Reach for the stars and find out!

If *Booty*'s the game that's giving you grief, **Alan Garner** has a swashbuckling routine to get you infinite lives:

```
10 CLEAR 26879: LOAD
""SCREENS: LOAD
""CODE 26880
20 RANDOMIZE USR
26880: POKE 58294,4
30 RANDOMIZE USR
52500
```

Run this, and play the original, it'll ignore the normal loader program. Get to it, and beat those pirates!

Steven Bennet's not short of a few ideas. He sent in lots of juicy POKEs — the first one's for *Ah Diddums*. Remember Imagine, do you? POKE 25924,0 makes the train wait forever, POKE 26278,0 makes the ball go on and on . . . POKE 25701,0 keeps the jack-in-the-box out of the box!, and POKE 24786,0 will give you infinite lives.

Next he tells us how to disable the nasties in Software Projects' *Orion* — try POKE 37319,201. You can do the same in *Zip Zap* with POKE 54065,0. Now, Steven has come up with some interesting snippets! He's found two lengthy messages in *Warlock of Firetop Mountain* and *Psytron*. Try these for starters. . . "We apologize for the game being boring but we were only given three weeks to write it." "*Return of the Things* coming soon . . . Oh no, not again!", or the romantic interlude, "Dear Fiona, you are too precious for mere words, but maybe 'I love you' will do." It's amazing what can be unearthed in the bowels of these programs if you dig deep enough!

John Whyte's been hacking around in Icon's *Bug Eyes*, and has found you can get infinite lives by running the following program and playing the original tape.

```
10 BORDER 0: PAPER /:
INK 0: CLS
20 LOAD ""CODE
30 POKE 36037,201
40 LET L=USR 36000
50 POKE 43393,0
60 RAND USR 42200
```

For those of you wishing to imitate the *Fall Guy*, alias Lee Majors . . . you'll find it easier with **Andrew Gibson**'s little program.

```
10 CLEAR 24100: LOAD
""CODE 64100
20 RAND USR 65100
30 LOAD ""CODE: POKE
43896,2
40 RAND USR 41200
```

This'll alter the game so that you only have to jump two carriages to get into the next screen, but it only works after the first screen. So get jumping!

OK folks, in the words of somebody just a little bit more famous than me, it's good-bye from me and it's a big hello to him . . . yes, I'm leaving this column in the trusty hands of Chris Wood as of next month, so send him some juicy hacks to sink his keyboard into! I'll still be hanging around in Frontlines with my Microdriving hints, so don't desert me — get those letters off now!

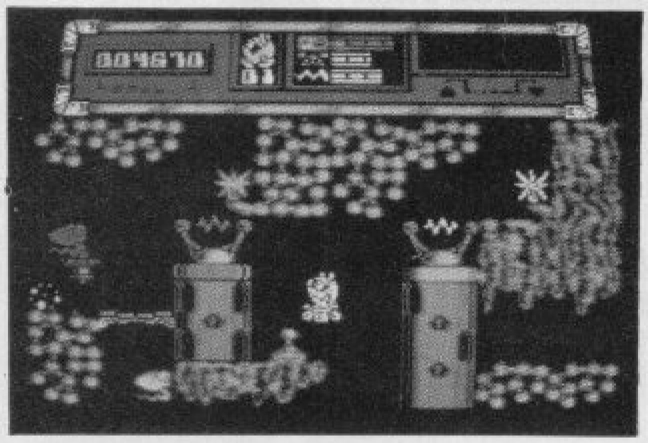
FRONTLINES

WIZARD IDEA

Ariolasoft has come up with a wizard idea for DIY addicts. Called *Wizard*, it's a ladders and platforms game with forty screens, eleven different spells, twenty monsters of various size and shape and a teleport facility.

But the exciting bit is the construction set that's included in the £7.95 price tag. So, when you get bored with the game you've been given, you can begin designing yourself a better one. You can keep your cash in your pocket until the end of September but if you can't wait to talk to someone, call Nick Thomas on 01-222 0833.

QUAKER NOTES



Will you throw a wobbly over *Star Quake?*

How d'you fancy leading a bio-robot on a star trek to a newly created planet, teetering on the very edge of the Galaxy? You know, the normal, everday, run-of-the-mill sort of stuff for the seasoned adventurer! Well, this is the scenario for the latest offering from Bubblebus Software, *Star Quake* — it could prove a space-shattering experience for you this autumn.

Your mission is to save the rest of the universe from imminent destruction ... whoops, there goes another universe! Be ready for take-off around the middle of October — one way ticket £7.95. Reserve your place now by ringing earth-person, Ann Lovejoy on (0732) 355962.

CLONING AROUND

Good news for *Avalon* addicts, the third in the series has been announced by Hewson Consultants for release in early October. Called *Astro-Clones*, it is horror-of-horrors, a shoot 'em up! Steve Turner the programmer reckons they're coming back into fashion so he's developed a whole range of new techniques to slot the new game into the adventure movie structure that *Avalon* pioneered.

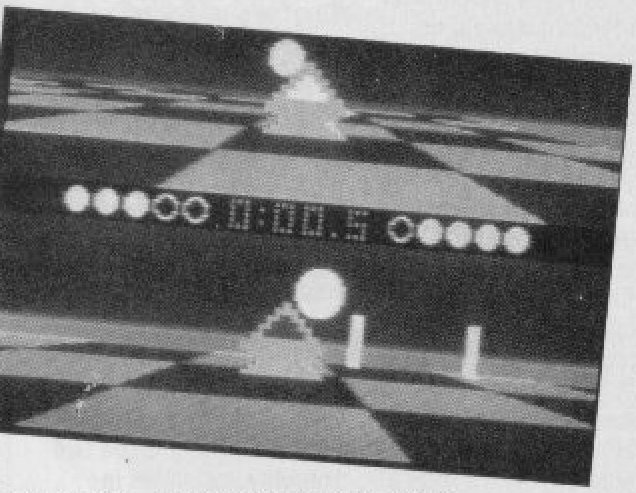
One such exciting development is that the body of the Clone has separately animated sections for extra realism. The upper torso, arms and legs all move relative to one another so the Clone can reach for a weapon, turn and fire it and then replace it in the holster when he's through.

If you fancy cloning around, more news can be had from Hewson on (0235) 832939. I should Coco!

SILVER SCREEN SOFTWARE

If you're a fantasy freak, you'll be into *Star Wars* and its follow-ups. And you'll welcome the news that Lucasfilms, the people behind the flicks, has designed two stunning games for Activision — both of them hits on other computers.

Ballblazer is a 3D split screen ballgame that blasts you into battle against an opponent on a chequerboard pitch. But at the speeds this game's played, the board is the only resemblance to chess.



Ballblazer — a whole new ball game!

Perhaps you'd prefer a flight round the planet *Fractalus* as a fighter pilot, fearlessly fending off an unseen enemy. Your mission is to rescue your comrades from the planet's surface but you're in for a shock if you land near an alien.

You can research release dates by ringing Activision on (0628) 75171.

FROM THE H/P



For openers this month, a call from a C Cox of Solihull in the West Midlands — no relation to our beloved (sic — or should that be sick?) Editor — (*Applications for the soon-to-be-vacant post of Deputy Editor should be sent to the usual address! Ed.*) He'd heard tell of a Dec/Hex convertor that was tucked away somewhere in ROM and he wanted to know whether there was any truth in the rumour. Well it *does* exist — in the Interface 1 ROM. If you'll take time out for a spot of history I'll explain how it came to be there. Back in the development days, the boffins at Sinclair Research put one in 'cos they thought it'd be handy, but they never bothered to take it out when they'd finished.

So, how can you take advantage of this extra feature-bug? Firstly, you'll have to install the Shadow ROM which you must do from machine code. Call the Shadow ROM, tell it which routine you want to use and then send the appropriate info you want it to deal with. To help you out, here's a disassembly for you to use.

LD HL, 1E87h	Address of the Dec/Hex routine
LD (5CEDh), HL	Tell the Shadow ROM what you want to use
LD A, number	Put the number you want to deal with in A
RST 8	Call the Hook Codes
DEFB 32h	Call the routine

Now change the 'number' value and then call the routine — oh, and don't forget to stick a RET instruction at the end of that routine if you want to get back to Basic after using it.

Without so much as a beak to sip me coffee, the next call came from Darren Smart of Cardiff. Darren's having problems with Input handling. He's writing a program that requires a variable to be printed within the input line — but he can't stop the Spectrum expecting to receive the value of the variable. Right, Darren, all you have to do is put a pair of brackets round the variable you want printed rather than evaluated. For instance, let's say that a$="Charles".

```
10 INPUT "What do you want to do now, ";(a$);b$.
```

This now prints up the contents of a$, but you'll find that b$ contains what you type in. You can use this method in exactly the same way for numeric input as well. Got all that? On we go then ...

Miner Mania threw quite a few of you — t'was that old problem of IN statements to read multiple keys. T'would seem the game was written on a version of the Speccy in the minority, so most of you who typed it in would have had some sort of difficulty. Fear not, 'cos all you need is a small patch, though this does mean that the multiple key-press feature won't work. Mind you, if you can't get any response out of them with that feature anyway, you'd be well advised to change!

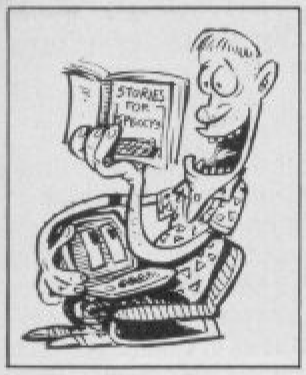
```
420 IF INKEY$="Z" AND Y>0 THEN ...
430 IF INKEY$="X" AND Y<30 THEN ...
440 IF INKEY$="P" THEN GO SUB ...
```

The ends of the lines remain the same. And that should be the end of all your troubles — until you start playing, that is: *Miner Mania* is a mighty mean game.

That just about wraps it up for another month. If you've got any programming problems, who ya gonna call? Don't answer that, just give us a ring sometime.

Catch you on the phones,
Troubleshootin' Pete

Pete's phone lines are open on Wednesdays and Fridays only. You can call him between 10am-1pm and 2-5pm on 01-636 2416.



PAPER DATA



Spectrum Wargaming
by Owen Bishop
and Audrey Bishop
Collins/£9.95

Calling all Spectrum warmongers. Now's your chance to plan and execute all those triumphant campaigns and strategies without suffering the tedium of third-rate wargames software. **Owen** and **Audrey Bishop** have come up with a book that offers enough wargaming and programming ammunition to help you on your way to winning the battle.

In true wargaming style, this book of tactics has two 'sides' — or rather, two approaches to the problem. Firstly, there's the direct method — just type in the complete games you're offered and off you go. And though they're certainly pretty good using them means that you'll miss out on an excellent lesson in software design.

The second path is purely for programmers and it's immensely flexible. A good wargamer will make great demands on the average wargames program and if you're going to meet those demands you'll just have to start programming yourself, simple as that.

Although this is specifically a wargames book you can adapt the tables for other simulations. You can play games from 1066 right into the future with single men or battalions. Here you'll find explanations for almost everything from morale to hidden movement. In fact, the only major omission I could turn up was Zones of Control — the area around a unit — and even this problem is partially solved by the routine Proximity that'll detect nearby units.

You'll find five games and five utilities listed. Each game has two parts — game mechanics and game data. The great flexibility comes from the way you can create or adapt large amounts of data using the utilities. You're given, for example, a Tablemaker, an Armymaker and a Mapmaker all of which speak for themselves. A fourth utility called Datastorer assembles all the files you've created and places them in a single file for use by the game mechanics.

These mechanics are little more than a collection of subroutines, with each game adding new elements. when the Napoleonic campaign is reached, there are twenty-two sub-routines, data, and just nine other lines. At every stage documentation is excellent, explaining computing to wargamers and wargaming to programmers.

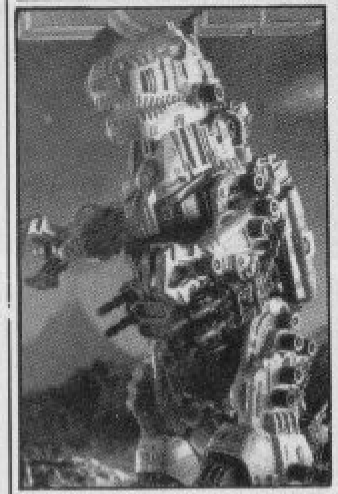
In effect, the book supplies a set of building blocks which can be used off the shelf or customised. In one sense the book has little to do with wargames or even the Spectrum for that matter! Instead we are introduced to a set of program modules, all of which are inter-compatible, and easily accessible. In this case good programming design happens to have been applied to wargaming on the Spectrum, and very successfully at that. Computer users may well find that wargaming seems accessible in this form as all the tedium of table writing has gone — and wargamers will probably learn more about program structure than they ever knew before.

For programmers and wargamers alike, this book offers sound tactics, and you'll find that your investment in terms of both time and money will transform you into a victorious wargamer. Battle on chaps!

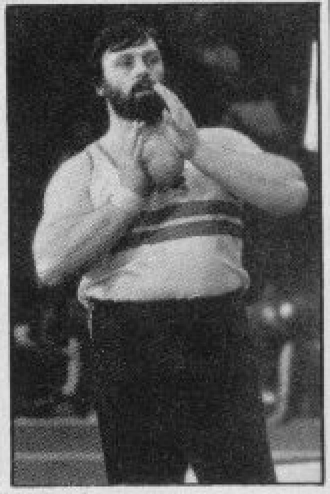
Ian Beardsmore

FRONTLINES

CAPES CRUSADER



Geoff Capes ...



A Zoid ...

Has anyone noticed the amazing similarity between Geoff Capes and a Zoid? Well, Frontlines can reveal that they are in fact related — both are to feature in new games from Martech.

Geoff Capes, the mammoth man of the Olympic Shot Putting world, needs his software toughened up — your task is to get him to the peak of physical fitness for the forthcoming event.

But if you find the idea of shot putting off putting, then surely you won't want to avoid *Zoids.* Imagine pre-historic robots roaming around a hostile world — dinosaur machines dedicated to destruction. The game is based on the horrific monsters of technology from Tomy UK, that've already taken the toyshops of this country by storm.

To find out more on *Zoids* or *Geoff Capes Strong Man*, call Martech on (0323) 768456 — it'll be a weight lifted off your mind.

BLASTING BASIC

Blast is a compiler: a utility that takes Speccy Basic and turns it into machine code — or that's the theory anyway. A pretty good idea, you're thinking — unfortunately, it isn't quite that simple. Others have tried to write compilers before but nobody seems to have quite got it right yet. The major failing of the packages on the market is their inability to compile certain instructions.

So, what's all the fuss about *Blast* for? Well, its major selling point is that it claims to compile 100 per cent of Basic programs. So, how, one wonders, does it manage it? Well, you can compile your programs using *Blast* in two forms. Firstly, it'll compile to machine code but the coding isn't very efficient and it'll use up more memory than the original program. So, its other option is to compile to a language called P Code that uses up less memory but still has to be interpreted in the same way as Basic. But, it is faster than Basic though slower than machine code, so it's most useful when compiling really lengthy programs where space is at a premium.

Both machine code and P Code require some 5K of *Blast* to be present when the code is called, so if you're compiling a short Basic program then you'll probably find that the program will grow in size by quite a large amount.

If either the program to be compiled or the compiled code is too large to fit in memory then *Blast* can be instructed to take its source code from tape or Microdrive rather than RAM. The compiled program can also be written to any of these three. Compiling via tape is not only very slow, but awkward. Compiling to Microdrive is worthwhile though, as *Blast* will happily access the drives as it needs to, without any instructions from you.

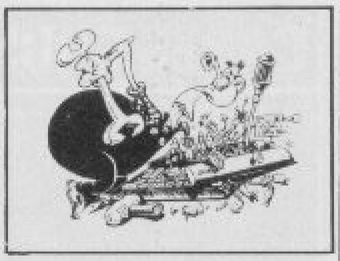
So, what of this claim that *Blast* can compile 100 per cent of Basic programs? Well, to test it out, I dug out a selection of four of my old Basic programs — some short, and others long — just to see what *Blast* could do with them. My results were not too promising — two of the programs crashed when executed and the other two, although happily compiled by *Blast*, didn't seem to show any dramatic increase in speed, and nowhere near the claimed 40 per cent speed increase.

On the B side of the tape comes a bonus in the shape of a toolkit. It includes features such as Copy line, Block move, Search and Replace, Trace and so on. Nothing special in other words. Really, until the bugs are ironed out, I'm not convinced that *Blast* yet justifies its £25 price tag, even with the freebies.

Tony Samuels

FRONTLINES

HARD FACTS



Having hassles with your hardware? Steve Adams will rush to the rescue if you tell him your troubles. Write to him at Hard Facts, *Your Spectrum*, 14 Rathbone Place, London W1P 1DE.

The first problem out of the bag this month comes from **D Rigby** who's after a stylus for his Sinclair printer. Well, this is easy enough to come by. CPC do all parts for Sinclair machines including the printer, but try Interservice Electronics Ltd, 85-89 Park Street, Southend-on-Sea, Essex SS0 7PX, (0702) 34641. They do printer repairs and the spares are probably cheaper too.

The next query comes from **P Nurse** who's having compatability problems with his Kempston printer interface and the Zeus Assembler. Well, if you set up the printer interface first, then load in Zeus you should find that it works — if the printer buffer isn't used to store code in. I've also used Zeus with my Interface 1 by typing in FORMAT t;300, then OPEN 3,"t" before entering Zeus.

Next a long distance plea for help from **R V Davis** in New Zealand who's having trouble loading in a whole load of his software. It sounds to me as if the memory chips are faulty in the upper part of the 16K 4116 chips. I suggest this because you mentioned the fact that there is no continuous memory above 25525 that works, as CLEAR 25526 fails with an error. Change these chips and the fault will clear up. (If any of you have a memory fault above 32767, then the 32K chips are faulty.)

Michel Griffone of France has a bit of a poser. He wants to know how to transfer DIMentioned strings to and from disk, as this requires the address and length of data to be sent to the Beta disk interface. Well, the easiest way to do this is to transfer the data to be sent above RAM top by POKEing it there. For example,

```
800 REM X=NUMBER OF STRING TO BE SENT
820 REM CLEAR (Y) AT BEGINNING OF PROGRAM.
830 FOR N=1 TO LEN A$(X): POKE N+Y, CODE A$(X,N):
NEXT N:REM CALL DISK WRITE ROUTINE (START Y+1,
LENGTH=A$ (X))
840 FOR N=1 TO LEN A$ (X): LET A$(X,N)=CHR$ PEEK
(Y+N): NEXT N
850 RETURN
```

This should set you straight.

Now for a little role reversal, **J D Marvell** has solved a problem for me! Yes, he's told me how to connect a Speccy to a video camera. The circuit he's devised costs around £30 for all the components, so if any of you wants more details, contact him at 52 North Tenth Street, Central Milton Keynes, Milton Keynes, Bucks MK9 3AX.

Before you go crazy **G Matthews** of London W7, let me give you some advice on how to get your Brother printer running with the RS232 lead from Interface 1. To do this, pins 5,6 and 8 need to be joined inside the printer plug. Good luck!

Ken Bailey has wired up his Spectrum to a Dragon keyboard and is enterprising enough to want to use the spare keys for other functions, in Spectrum+ style. The only thing is, he's not sure how to go about it! Well, you could get a small set of diodes to fix up some of the keys, but things like extended mode require extra chips or a change of switch — that is a two pole type. It's not a simple problem to solve, but take a look at my book *Twenty Simple Projects for the ZX81 and the ZX Spectrum*, and you'll find the circuit you need, plug, plug!

Talking of the ZX81, **Amanda J Uren** wants to know how to fit a ZX81 printer to her Speccy. This is no problem. The printer can be driven from the normal 9 volt supply, (through the edge connector). The only difference with the ZX81 type transformer you have, is the jack plug on the end. Just cut this off and replace it with a barrel type plug which will work with the Speccy. Don't forget it'll only work one way round, so if it doesn't work first time round, switch off and reverse the connections.

A E Briggs has found himself a colourful little problem! When he uses his VTX5000 modem with Interface 1, he gets red squares all over his screen! When you power up, the VTX5000 ROM should come in first. When it's set itself up, switch back to the Basic ROM and Interface 1 ROMs to initialise. If you get an error, Interface 1 tries to come in first and 'locks' the system up. Now you know what causes the hitches, and the best way to get rid of those red squares is by powering up from the mains. Best of luck — there's no fool proof solution, I'm afraid.

Well, I've no room for any more words of hardware wisdom this month. Write to me with your hardware hassles at Hard Facts, **Your Spectrum**, 14 Rathbone Place, London W1P 1DE.

WHO YA GONNA CALL?



Daa da da daa da-da da! (*That's enough da's for one issue, thank-you! Ed*). Have we got a compo for all you potential pilots fired up by last month's review of *Dambusters*. US Gold is offering twenty-five copies of its latest megahit to *YS* readers. All you have to do is wage total war on a couple of easy-peasy questions on the bouncing bomb:

Who invented the bouncing bomb? Was it:
a) Barnaby Bear?
b) Barnes Wallis?
c) Barnard Wellington?

Which planes were used by the *Dambusters*? Were they:
a) Spitfires?
b) Lancasters?
c) Trident 3s?

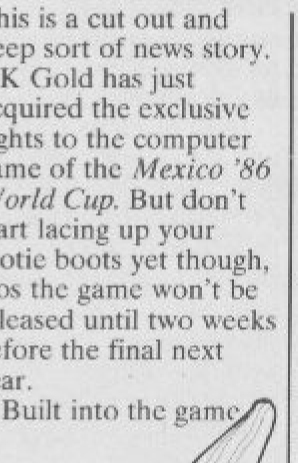
Now write the answers on the back of an envelope or a postcard and wing them on their way to *Dambusters* Compo, *Your Speccy*, 14 Rathbone Place, London W1P 1DE. C'mon and open the floodgates!

CUP FEVER

This is a cut out and keep sort of news story. UK Gold has just acquired the exclusive rights to the computer game of the *Mexico '86 World Cup*. But don't start lacing up your footie boots yet though, 'cos the game won't be released until two weeks before the final next year.

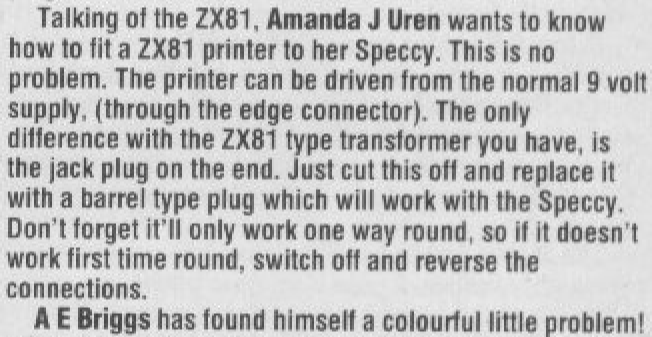
Built into the game will be a sort of 'progress monitor' so you can keep up with events in Mexico as you enter your game results. You'll also get to meet a character called Pique (*I thought that's what footie stars had fits of! Ed*), the mascot of Mexico.

And the price of this soccer sensation? £8.95! If you can't wait for it to make its way from the changing rooms, phone UK Gold on 021-359 8881.



Pique, alias Seedy Gonzalez, the mighty (?) Mexican mascot!

MUD LARKS



Knee deep in MUD!

Here's *MUD* in your eye! *MUD* stands for Multi-User Dungeon, a mighty many-personed game that's run over the telephone via your modem. And now Firebird has acquired the rights and is making it available to Speccy owners. The program's so complex it'll give you a headache just thinking about it, but once you're into it, prepare to be hooked.

And that's good news for British Telecom shareholders everywhere. Putting aside the phone bill, you'll have to fork out for units to play the game — and they'll set you back 20p each at six minutes a throw.

If you're not ready for the *MUD*-slinging just yet and want more info, phone 01-379 5157 and boost BT's coffers as you speak.

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FIST FIGHT

Pain is the name of the game. And the game is* The Way of the Exploding Fist *from* Melbourne House. *Dougie Bern has been playing it for kicks!

Now I'm not Bruce Lee but as a tyro practitioner of the Martial Arts, I was a bit sceptical about reviewing *The Way of the Exploding Fist.* How can you capture the excitement of karate on a computer? Well, now I've seen the game and all I can say is wow — or should that be POW! This is truly a blockbuster — as any good karate game should be!

Never let anyone tell you that Speccy games aren't still the best. The graphics of the two karate combatants are superbly animated and very realistic, showing just what can be achieved with a lot of hard work and attention to programming detail.

Punch Lines

It is your task to progress through the ascending Dan grades until you attain the exalted rank of a master. But the path is arduous so be prepared to take a few knocks along the way. At each level of the game you must beat your opponent twice before proceeding onto the next stage. Use the complete karate arsenal to knock him to the ground — direct hits score a full match point but you'll still get half marks for a badly executed move. No need to commit hara-kiri just yet!

You can call on a complete range of eighteen different punches, kicks, blocks and sweeps to pulverise your opponent with. What's more, all the moves are true to life and very accurately reproduced. But watch out 'cos the more skilful you become, the more accurate he gets — so prepare to eat a few sand sandwiches as well as those of the knuckle variety.

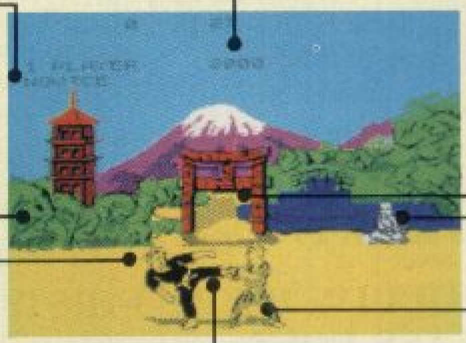
At first you'll find yourself slightly overwhelmed by the number of options you have at your disposal. Eighteen different moves means a brain-numbing choice of keys for you to master. But the controllability and speed of response of the game are excellent and produce an amazing sense of realism. You can almost feel your fist as it smashes into your adversary's face.

Though it's tricky at first, *The Way of the Exploding Fist* certainly simulates a good karate match. Definitely a game to chop around for!

Honourable players Dan grade is displayed here. The more skulls you crack, the closer you're gonna get to the elusive tenth Dan.

Old japanese proverb says, "Wise man cultivate the spirit of perseverence even as the sun goes down, and he is eternally rewarded here with high scores."

To enter the honourable Dojo and fight where the immortals have fought before you, you must win two bouts in a row.



The backdrop doesn't play any real part in the game but it does add a touch of authentic Japanese atmosphere. Looks like a very professional *Melbourne Draw* job.

Confusius say, "Man who don't keep hands up, get kicked in teeth." Ah so, make sure you stay on the move and use plenty of blocking tactics, though they're not really that effective in the higher Dan grades.

The first bout takes place outside the gates of the honourable Dojo. You begin by facing your opponent and bowing in true ceremonial style. Only then are you ready to do battle.

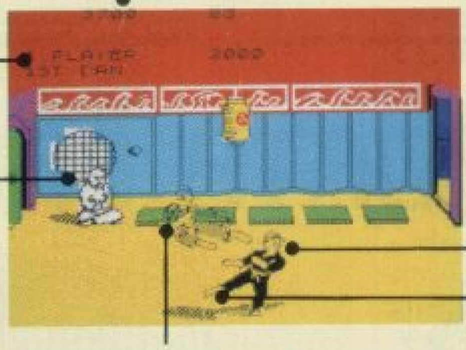
The computerised karate kid is always in grey. Here he's taking a real pounding. Ouch, cracked ribs (gleat Chinese delicacy) velly painful!

The side thrust kick (Yoko Geri Kelkomi) is very effective at long range. But you have to take care 'cos your opponent's a dab hand at sweeping you off your feet from this position.

The number of points you've clocked up is displayed here but it's only updated at the end of each bout. The more difficult the technique you use, the more points you'll receive for it.

Train hard and you'll be awarded the first Dan grade and allowed to enter the Dojo. But prepare to fight even harder if you want to maintain your new status.

That's the way — sweep him off his feet as he comes into land. This move is especially effective when your opponent has just completed a move.



Your master, the Sensei, keeps a watchful eye on your progress. Actually, he's just part of the local colour and plays no part in the proceedings.

No, it's not shadow boxing — this is karate and it's for real! But the shadows are an effective addition to that realism. The two challengers may be two colours only but you couldn't wish for more life-like movement. You'll feel the thud as your opponent's fist lays you out.

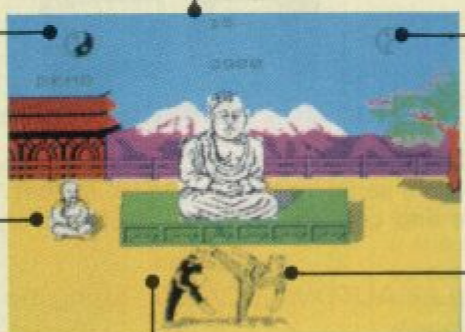
● If you're really getting into trouble, try getting away from it all by somersaulting over the head of your opponent. Follow it up with a quick back kick (Ushiro Geri) to sweep him off his feet when he's least expecting it.

The flying kick is a very powerful technique developed for dislodging riders from their horses. To use it effectively is extremely difficult and it leaves you open to sweeping attacks when you land.

Victory in a bout comes when one player's totted up two complete match points. If time runs out on you, then the one with the most match points wins. A hint for cowards — come in quick and score a point then dodge about until time-out!

The Ying and Yang symbols of the mandala show your match points in the current bout. If you perform a perfectly executed move that scores a direct hit, you'll receive a full match point and your score points are doubled.

If you make a duff move but still manage to bring your opponent to his knees, you'll only receive half a match point.



● For close range combat, use the punches and jabs. They're the most effective method of taking the heat off until you can get away.

You've got to be good to get this far. It's back outside again under the expert supervision of the Sensei and the all-seeing eye of the Buddha.

The side snap kick (Yoko Geri Keage) is great for bops on the chops but beware it's very easy to block. Prepare to follow through with a quick punch or a sweep.

The reverse roundhouse kick (Mawashi Geri) is one of the most difficult to pull off but when you get it right it nearly always scores a full match point. It's especially useful for crushing your opponent's kidneys.

FORUM

The writing's on the wall. Just peel it off and send it in to Forum, Your Spectrum, 14 Rathbone Place, London W1P 1DE. And there's a bundle of free software waiting for this month's Star Letter!

OUT OF OUR LEAGUE

C'mon you lot! Either Bobby Charlton or you lot on *YS* know sweet FA (geddit!) about a football pitch.

Just read this from *Frontlines*, issue 17: "There's a lot more to it than shooting from the sixty yard line." Anyone who can shoot from the sixty yard line, should be playing for East Fife or locked up!

Are you still playing Subbuteo? Or have you made what's commonly known as a footballs up?

D Leitch
Leven, Fife

After a quick show of hands in the changing rooms, we couldn't produce even one footie fanatic on the team. So, what's wrong with a sixty yard line and why do they only have them in East Fife? In fact, the last time the Ed put on a pair of shorts, he was arrested for indecent exposure! Not that there's anything wrong with his knees that amputation wouldn't cure. Troubleshootin' Pete

TO BE SHAW, TO BE SHAW

Pssst... After doing a little sniffing around, I sussed out that the following games are due for release in the very near future. So, look out for *Dun Nothin', Manic Mooner, Spotty Pidgeon, Monty Birthmark, Spy vs Spy Hunter, Anne Droid Three, Swanvesta Day* and *Kosmic Kanga's Jump Challenge.* Check 'em out!

G A D Shaw
Barnsley, S Yorks.

Ummm, I'd very much like to know who your source is, 'cos our spies have only told us of You're Welcome to the Frankie Drone, Dimbusters, *and* The Choccy Horror Show *(a tale of marauding Mars Bars). If anyone else has further information, you know where to send it — elsewhere! Troubleshootin' Pete (the other Shaw on this mag!)*

How many times have I told you to stop members of your family from sending us silly letters? Will this bid by the Shaw clan for global supremacy never cease ? Ed

GRID BUG

A while ago, I wanted to plan a screen of output but found that I'd run out of grid paper, so I knocked out a bit of code to produce a grid. Calling it from Basic, everytime I needed it was a pain, so I put it into an Interrupt service routine. The original grid was a solid affair and took an eternity to do, so I added a flag system that caused a grid to be produced every other interrupt. Basic was still being deprived of time so I altered the grid to dots as opposed to lines. A means of switching the grid on and off without recourse to the USR call also helped and I've used this final version ever since.

YS August ish saw Toni Baker back with a beaut'. Right, what's the Grid Routine going to say about being called every four or five interrupts or whatever. It didn't mind one bit and casting modesty to the wind I reckon Toni's Interrupt Manager has elevated the humble grid routine to a level worthy of fellow *YS* fans.

In Toni's Interrupt Table, the Flags bytes don't use the five most significant bits, but if they were to be used and any one or more was high, just prior to checking which ROM is current, a crash may occur — so I suggest inserting the following just before the accumulator is loaded with the first byte of ROM.

```
LD A,C
AND 3
LD C,A
```

AND 3 has been used to mask 6 bits since the C register is subjected to a right arithmetic shift a little earlier. The Grid Routine uses bit 7 of Flags, and only produces a grid when it's high. It also calls upon good services of the Spectrum ROM, so for Interface 1 owners (yours truly not included — I'm too poor), bit 2 and bit 1 of Flags should always read 01.

To get the routine running, place the address of Grid in the Manager Table. Use a Counter and Priority value of, say, 5 to get a feel to start with. The value of Priority will depend on what use you put the grid to. With regard to flags, the value should be 3, that is activated but no grid.

Ok, so where's the flaming grid? I hear you ask (or words to that effect). Press the space key and G together (still nothing) and let go — one grid. The grid will go away again once you've pressed the Space/G key combination again.

```
GRID    DEC  DE

  Points to IR FLAGS

        LD   A,#7F
        IN   A,(#FE)
        RRA  ; Space key?
        JR   C,GD_ON?;Nope
        LD   A,#FD
        IN   A,(#FE)
        BIT  4,A ; G key?
        JR   NZ,GD_ON?;No

        LD   A,(DE)
        XOR  #80
        LD   (DE),A

; Space/G keys flips bit 7
  of IR FLAGS

        CALL WAITNK

; Wait until k'bd is free
  otherwise I'll flip bit
  7 again, and again.....

GD_ON? LD   A,(DE)
        RLA
        RET  NC ; Grid is
not reqired so I'm off
back to MANAGER

; Produce Grid (20 ms of
  sheer bliss)

        LD   HL,#4000
        LD   BC,#AA
        LD   D,3
SECT    LD   E,3
HORIZ   LD   A,(HL)
        OR   C
        LD   (HL),A
        INC  L
        DJNZ HORIZ
        INC  H
VERT    INC  H
FILL    SET  7,(HL)
        INC  L
        DJNZ FILL
        INC  H
        DEC  E
        JR   NZ,VERT
        INC  H
        DEC  D
        JR   NZ,SECT

        BIT  7,(IY+1)
        RET  Z ; I'm only
prepared to do a 24 line
COPY during runtime

        LD   A,#7F
        IN   A,(#FE)
        AND  3
        RET  NZ ; SS/Space
keys not depressed ie COPY
not wanted so shoot back
;to MANAGER

; 24 line COPY comin' up

        LD   B,192
        LD   HL,#4000
COPY_1 PUSH HL
        PUSH BC
        LD   A,B
        CP   3
        SBC  A,A
        AND  2
        OUT  (#FB),A
        LD   D,A
COP_L1 CALL #1F54
        JR   C,COP_L2

        CALL WAITNK

; Wait until k'bd is free
  else I'll BREAK out of
; BASIC first chance

END_1   POP  HL
        POP  HL
END_2   LD   A,4
        OUT  (#FB),A
        RET  ; Had enough?
COP_L2 IN   A,(#FB)
        ADD  A,A
        JP   M,END_1
        JR   NC,COP_L1
        CALL #0F12
        POP  BC
        POP  HL
        INC  H
        LD   A,H
        AND  7
        JR   NZ,COPY_2
        LD   A,L
        ADD  A,#20
        LD   L,A
        CCF
        SBC  A,A
        AND  #F8
        ADD  A,H
        LD   H,A
COPY_2 DJNZ COPY_1
        JR   END_2

; Wait until there are no
grubby hands on MY k'bd
routine

WAITNK XOR  A
WAIT    IN   A,(#FE)
        CPL
        AND  #1F
        JR   NZ,WAIT
        RET

  Back to the MANAGER -
  I'm worn out!
```

Now that we can have up to 16 interrupt routines running at once this is a golden opportunity to include Toni's Machine Code Breakout in *YS* issue 1. It's amazing what this routine does with so few bytes, and it's even shorter when adapted for Interrupt Manager.

David Roberts
London SE4

Phew, thank goodness you stopped when you did or you'd have written it so it appeared every time you sneezed! Nice one, Dave. Troubleshootin' Pete.

LE MICRODRIVIN'

I'm desperate. . . I can't load long programs properly on the microdrives I bought last April in England. I knew Uncle Clive's microdrives weren't perfect but I didn't think they could be this bad. In fact, programs load OK for a week or so and then when I need to use them again, I get the 'file not found' error message. The four freebie cartridges work without problems. Perhaps there's something wrong in the saving procedure? Perhaps it's the cartridges, I don't know. Can you help?

Veuillez agreer l'expression de mes sentiments distingues et devoues.

Olivier le Roy
Murs-Erigne, France

Sacre bleu. La plume de ma tante. Brigitte Bardot. (That's enough French for one issue, thank-you. Ed). *This is the classic problem. For openers, if the drives have been playing up since you first bought them, then it's a good idea to send them back where they came from for a replacement. But if this is a fault that's developed over a period of time, then it could be down to a number of things. First, check that the cable between the Interface 1 and the microdrive looks OK*

and move it about till you've got the best position for the connection. Also, move the Speccy system as far away from the TV/Monitor as possible. If all this fails, bring out the Kleenex and break down yourself for the evening. Troubleshootin' Pete

LIST TO PORT

I've done it! I've finally discovered a mag that doesn't ignore microdrives. (*And what took you so long may I ask? Ed*). But there's still room for improvement — why don't you have a section each month devoted to the little black boxes. As a newcomer to them, I'd find the hints'n'tips very useful. *(My, you are behind the times. What d'you think Andy Pennell's up to in his new column? Ed).*

One more thing. In *Forum*, issue 13, 'Someone POKEd Pete' with the following suggestion for changing line zero to another line and vice-versa — POKE (PEEK 23535+256+PEEK 23636)+1,X. Well, correct me if I'm wrong but doesn't POKE 23756,X do exactly the same thing with less strain on the old fingers?

Paulo C
Coimbra, Portugal

Nope, you're not wrong but then again you're not wholly right either. It all depends on whether you've got the Interface 1 connected. This is something a lot of POKErs forget when coming up with these quickie solutions. Troubleshootin' Pete.

JOIN THE CLUB

I'd really like to know how to start a Spectrum club in my area. What activities should we plan and how do we raise funds? Has anybody got any tips?

Cathal Curtis
Carlow, Ireland

Well, Cathal the simplest method if you're still at school or college is to form your club there. Ask a teacher or tutor if they'd be interested in helping you. If you've left the blackboard jungle behind you, then it's an idea to try the local library. They usually have back rooms where you can meet with your machines and it's a good place to pin up notices. Of course, if you're a group of adults, why not meet at the local pub once a week. Once you've marked out your meeting place, it's just a question of drumming up the membership. Send out press releases to all the computer mags and to your local paper. Advertising in local newsagents will also bring in a few newcomers. After that, word of mouth will do the trick. Of course, if anyone in Carlow wants to get in touch with Cathal, we'd be happy to pass on your letter. Troubleshootin' Pete

BOND AID

How could you call *A View To A Kill* a megagame. I bought the game and can only sum it up as megagarbage. I was appalled by the pathetic graphics and there were more bugs than in the office of the KGB. I kid you not, my first attempt at games writing was almost as good as this. When the Paris Chase quickly drove me into the second program, I found things a little better but really the duck shoot stop-start system just slows the whole game down. The only exciting thing about the Silicon Mine game was watching Bond tumble all over the place suffering multiple injuries and then making an amazing recovery after scratching his nut.

Come on *YS!* — Megagame! Were you bribed or were you just maintaining your chances of getting OBEs. *(Mmmm, Troubleshootin' Pete OBE. It has a sort of ring to it! TP).* I'm sure even Bond himself would have preferred the game to stay Top Secret.

But apart from this, I think the magazine is mega fantastic (crawl, crawl) and I hope this minor criticism won't prevent you from publishing my letter (grovel, grovel).

Scott Murdoch
Linwood, Refrewshire

Don't think you can get round me like that. How dare you! You accuse me of being bribed and then expect me to publish this terrible tirade against my integrity.

Well, let me tell you, it was only the fiver you slipped in at the last minute that persuaded me to relent. Ho hum.

And c'mon let's not be modest — you've got to admit our review was much better than the game itself! Ed

N..N..NUTCASE

Ha, a real nail in the coffin for Kevin Cox-up here, unless TP's got a st..stutter. Anyone read *From The Hip*, issue 17 lately? Well, I quote: "Got that? Well, let's say that you've stuck your routine at 50175 — and you've stuck your routine at 50175 — and you've remembered to clear up (shouldn't that be down?) to 50175 haven't you?" Notice how it's been taken beautifully out of context to make TP look stupid — not that he needs it!

Plus, am I blind or are you getting mega-stingy on your free software? I can't see a star letter in sight. Phew! If all that doesn't deserve a trainspotter award, what does? *(You can find out at the bottom of the page! Ed)* So gimme!

Ian Fisher
Barbourne, Worcester

N..n..no, Ian we ain't getting stingy but we're making an exception in your case — you're getting nowt! Troubleshootin' Pete.

DRIVE WITH CARE

I read your rave review of the Mirage Microdriver in the August issue with interest. Did you know that it doesn't work with all Spectrums? — you don't seem to be aware of the fact and Mirage very conveniently forget to mention it in their adverts.

I'll agree that I had no trouble getting my money back when I returned the Microdriver but Mirage denied all responsibility for a fault that'd developed on my Interface 1 after attempting to use the Microdriver.

W Sawyer
Leigh on Sea, Essex

Right, Mr Sawyer, we had a chat with Mirage about your problem and it seems that the Microdriver doesn't work with late issue 1 and early issue 2 Speccies. That particular batch had a fault in the clock — something Sinclair Research owns up to in their service manuals. It's even cured automatically whenever one of the offending machines goes in for an overhaul. Mirage is now putting a note into the instructions explaining the problem.

Mirage won't take the blame for your Interface 1 troubles, though. The Microdriver is an unpowered unit, so Mirage reckons there's no way it could blow up your Interface 1 unless you unplugged it while the system was switched on. Troubleshootin' Pete.

CHECK IT OUT...

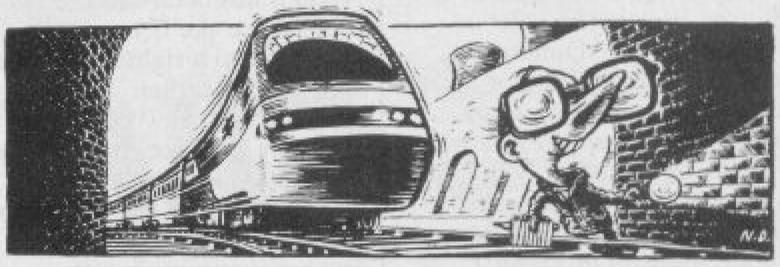
I rushed home with ish 16 and typed in *3D Daze* from Mr MegaBasic, Mike Leaman. But when I put in the checksum it went berserk. A little bit of detective work pinned the problem on the Hex Loader — Z has been assigned to the loop in lines 50-70 as well as to the start address in line 25. So, instead of the checksum starting at 64000, the start address, it began where the loop finished, coughing up a total of about 200,000.

So, how'd you solve it, I hear you ask. *(How'd you solve it? Ed).* Just assign a different variable to the loop in lines 50-70 instead of Z — such as M, that's how!

Tuhin Goswami
Glasgow

Drat, you spotted the deliberate mistake thrown in just so you wouldn't think we were perfect. What d'you mean, worra lorra waffle? Oh well. Ed.

THE YS TRAINSPOTTER AWARD



Well, what a silly witty Burger, Tony 'Slim' Samuels is. Take a look at *The Generation Game* in issue 17. So, the sound on *HURG* is worth a double cheeseburger, is it?

He sounds — 'scuse the pun — *(That's OK, we didn't notice it. Ed)* like the kind of daft Burger who writes music programs on the ZX81! *(You mean you've never heard his famous rendition of the Sounds of Silence? Ed)*

Just for the record, and a mustard stained Trainspotter's Award, there ain't no sound on *HURG*. Well, if there is, I've not come across it yet...

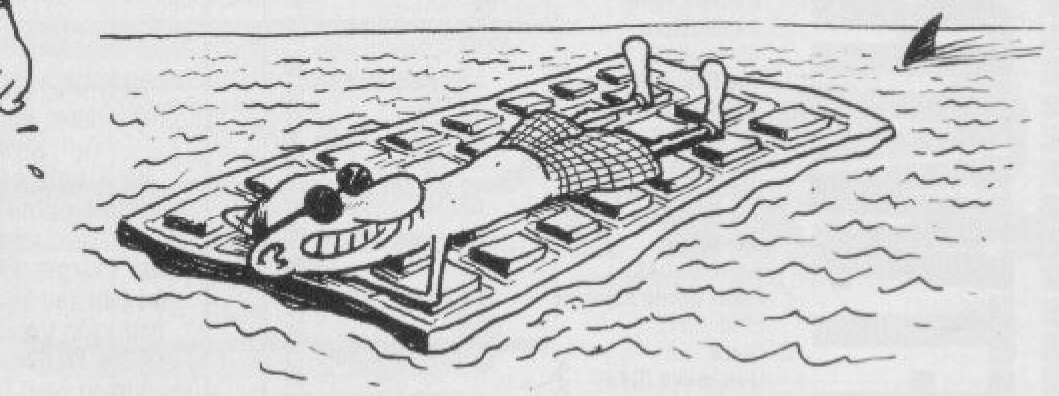
M Sleight
Doncaster, S Yorks

Sounds as though our Tone was too busy chompin' at the cheeseburgers — well, just the sound of eating is music to his ears. Don't worry though, It won't happen again. Another slip-up and we'll be stopping his luncheon vouchers. Ed.

COMPETITION

101 Uses...





There must be a hundred and one uses for a dead Speccy keyboard — well, they're not much cop when it comes to the job they were designed to do. Now's the time to put your thinking caps on and bounce a few ideas in our direction.

Just stop for a minute and consider what it would be like if you were one of the lucky winners of this month's megacompo. Think of the excitement at reading your name in *YS* when the winner's are announced! Then the wait until that joyful day when the postman brings the precious package that contains your prize. You tear at the brown paper that houses the new treasure. What is it? Well, it could be one of the four new Saga 3 keyboards that are up for grabs. The latest addition to the Saga range, these stylish white keyboards will release the full potential of your Speccy.

What more could you want than a super-dooper 87 key keyboard worth £79.95, that's compatible with *all* known Speccy peripherals, and *all* available software, including our very own *YS Megabasic!* There's a 10 key function pad, and 27 of the keys are auto-shifted too. Sounds like it's time to wave bye-bye to your faithful flexible friend and let your Speccy meet a Saga 3!

If it's not a coveted Saga 3 perhaps it's one of the three Saga 2 keyboards that are the envy of all serious and stylish Speccy owners. It may even be one of the three Saga 1s that have so generously been given away.

Whichever it is, you cannot contain your excitement as you unwrap your prize and begin the transformation of your Speccy. It is a matter merely of minutes until it sits before you in its white'n'shining armour.

And then the awful truth dawns. Forlornly cast aside on the floor lies a once treasured possession — your old rubber keyboard*. How could you abandon it after all those hours of faithful service? It's akin to casting off the body of a dead friend without a decent burial — bit funny that 'cos it'd always felt rather dead before!

Fortunately, this tearful scene hasn't happened yet. But forewarned is forearmed. Now's the time to consider what you'll do with your dead Speccy keyboard if you win one of the Saga keyboards. It's no use putting off the decision until it's too late. And think of the service you'll be providing for Speccy owners everywhere — no longer will they have to delay the day that they replace their old rubber friends simply because they couldn't think of any useful work for them.

And that's why we're asking you to send in your suggestions now.

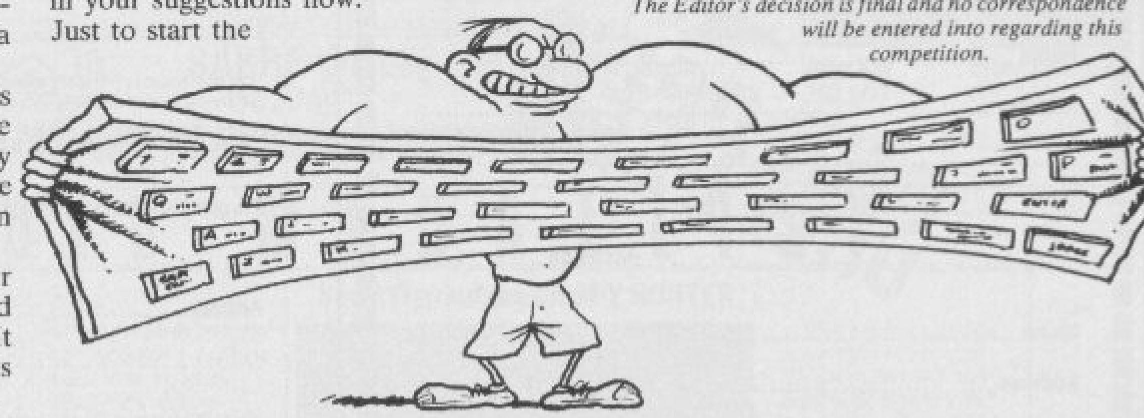
Just to start the ball rolling, take a look at our cartoon and then come up with an idea of your own. If yours is amongst the funniest and most original, you'll be rewarded for your ingenuity with a spankin' new keyboard from Saga.

It'll also mean that no-one'll now have any qualms about taking Saga up on their other generous offer. Everybody who enters the compo will automatically be sent a £5 voucher that can be used against the price of any Saga keyboard.

*A footnote to this tale of woe — though the send-off may not be as tearful, remember that you can just as easily replace your cut-down QL placcy keyboard with a new one from Saga. Now that *is* a plus!

SAGA RULES OK

Entries for the Saga Keyboard Compo must be post-dated no later than October 31st 1985. Each entry form must be completed with your startlingly brilliant idea for a rubberised retirement job for your old keyboard. The Editor's decision is final and no correspondence will be entered into regarding this competition.



SAGA KEYBOARD COMPO

Name ....

Address ....

....

....

.... **Postcode** ....

I'd never desert an old friend — but I do want a new Saga keyboard! So, here's what I'll do with my old rubber sidekick if I win one.

....

....

Send off this coupon as quickly as possible to Saga Keyboard Compo, *Your Spectrum*, 14 Rathbone Place, London, W1P 1DE. the future of your rubber keyboard could depend on it ...

Magazine Health Warning If you haven't the heart to dispose of your old rubber keyboard, how can you cut up your copy of *YS*! Why not use a photocopy instead?

Play more games the *YS* way! You'll save £££s with our special cut-price software offer! Go for it!

Wanna stretch your pounds or your pocket money? *YS* is giving you the chance to grab all your fave-rave-chart-topping-games for less cash. Why pay full price when you can get more games this way? Just pop the coupon in the post and get ready to play!

YS SOFTWARES!

	R.R.P.	OUR PRICE
☐ **Frankie Goes To Hollywood** Ocean (044)	£8.95	**£7.95**
☐ **Hypersports** Ocean (049)	£7.95	**£6.95**
☐ **A View To A Kill** Domark (036)	£10.99	**£9.99**
☐ **Dambusters** US Gold (047)	£7.95	**£6.95**
☐ **The Fourth Protocol** Hutchinson (049)	£12.95	**£11.95**
☐ **Jet Set Willy II** Software Projects (042)	£6.95	**£5.95**
☐ **Highway Encounter** Vortex (050)	£7.95	**£6.95**
☐ **Spy v Spy** Beyond (048)	£9.95	**£8.95**
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☐ **Jet Set Willy** Software Projects (006)	£6.95	**£5.95**
☐ **Saberwulf** Ultimate (003)	£9.95	**£8.95**

At these ridiculous prices, how could I resist this exclusive *YS* offer? I've ticked the games I want to order and enclosed a cheque for £.... made out to Sportscene Specialist Press Ltd.

Please charge my Access/Visa/American Express/Mastercharge card

number* ....
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YOUR SPECTRUM GO FOR GOLD

On your marks, get set ... Go! The race is now on to find the *YS* Champion Gamesplayer of the Year. Join the fun and strike out for the *YS* Games Gold Medal.

Over the last few months the keenest of you games-players have taken up our challenge and gone all out to win a *YS* Gold Medal with your impressive high-scores.

Well, now we're going to reveal the winning secrets of each champ of the month so that the rest of you can pick up a few helpful tips to help you on your way!

Don't forget, we don't want to see any hacked or hyped scores, we can see straight through them ... but remember even if you can't top the winners, you may find your entry gets pulled out of the *YS* hat and three free pieces of software will be on their way to you! Look out **Thomas Kradberg** Pederson of Faarud, Denmark, you're this month's lucky winner! So, come on games players, fill in that coupon and win!

YS GO FOR GOLD

My top 5 all-time greats are:

1 ....
2 ....
3 ....
4 ....
5 ....

My top scores are*:

1 ....
2 ....
3 ....
4 ....
5 ....

The next games I'm gonna rush out and buy are:

1 ....
2 ....
3 ....
4 ....
5 ....

*You don't have to fill it all in but make sure you specify the level of difficulty for your scores.

If you're going for gold, stick your mugshot here

Make sure you send us a black and white photo of yourself if you've filled in your high scores.

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Address ....

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Independent Witness

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Complete this coupon and send it to Go For Gold, Your Spectrum, 14 Rathbone Place, London W1P 1DE.

YOUR SPECTRUM

ALL · TIME · TOP · TEN

1 SPY HUNTER
US GOLD

9



Scott Donaldson 217,225
Richard Tobias 205,375
Noel Wallace 190,490

2 MATCH DAY
OCEAN

1



Chris Robinson 18-0
Robert Dysart 23-5
Colm Kernan 15-0

3 DALEY THOMPSON'S DECATHLON
OCEAN

3



David Bass 1202,403
Sergio Tavares 988,971
Terry Braverman 932,718

4 ATIC ATAC
ULTIMATE

2



John Roberts 99%
David Harewood 99%
Jason Temperton 99%

5 KNIGHTLORE
ULTIMATE

4



John Hudspith 100%
Thomas Pedersen 78%
Richard Tobias 74%

6 GHOSTBUSTERS
ACTIVISION

5



Noel Wallace 73,100
Peter Fox 67,700
David Lynch 55,000

7 STARION
MELBOURNE HOUSE

RE-ENTRY



George Forsyth 12,721
Scott Donaldson 3,106
Justin Menhenett 443

8 ALIEN 8
ULTIMATE

10



Brian McKenna 24 Chambers
Valentin Kressler 16 Chambers
Philip Markin 12 Chambers

9 JET SET WILLY
SOFTWARE PROJECTS

1



Stuart Smith 84 items
Skul Adamson 79 items
Steve Bond 78 items

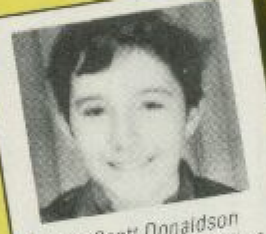
10 SABRE WULF
ULTIMATE

RE-ENTRY



Samir Belmiloud 355,210
John Kay 260,000
Steve Colwill 200,000

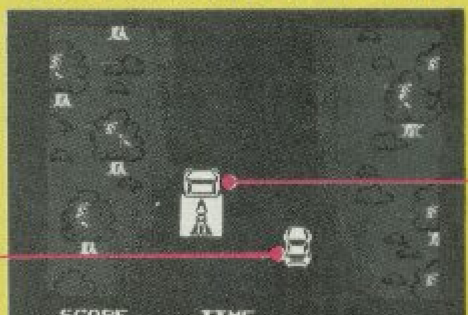
YS GOLD MEDALLIST



Name: *Scott Donaldson*
Town: Whitehall, Hamilton
Age: 13
School: Hamilton Grammar
Hobbies: Speccy, Badminton, Chess
Fave Game: *Hypersports*
Fave Music: Ultravox

Scott Donaldson on SPY HUNTER

Your superdooper spy car can shoot everything apart from the blue death-cars and the choppers. So, to blow up a helicopter, you'll have to pick up a missile from one of the trucks.



After the truck dumps you at the beginning of the game, be quick and drive back in before the ramp is raised. That way you'll have a rest from the traffic — no vehicles appear! If it's invincibility you're after, keep your finger on the up key while you're holed up in there.

There's just no point in going at top whack — trundling along in low-gear is a much more effective way of zapping the other road hogs. And above all make sure you take out the red mean machines with the nasty Boedicea style knives on their wheels — or you could be cut up about it when they run you off the road.

When you're on the water, watch out for the blue boats. They drop mines, so the best bet is to drive slowly with your finger on the fire button. Keep to the right as far as possible when you're overtaking the yellow peril boats. That way you'll find it easier to dodge the missiles they fire at you and rejoin the road.

THE BIG BANG!

Pssst. Hey, you. Wanna become a hundred per cent real person? NO, this ain't no jibe.* Peter Shaw *and* Louise Cook *welcome you to the Pleasuredome to talk it over . . .

Welcome to the Pleasuregame, says Ocean, and you're welcome to try it, says us. Frankie may go to Hollywood, but here in Mundanesville life ain't so easy for the likes of Lenny Lowscore.

Picture downtown Liver*poole*, a downmarket version of Brookside Close, those typical Beatlesque back-to-backs — this is your lot in life, being a zilcho percent person. Wouldn't you find the Pleasuredome an irresistible temptation? So along comes Flash Frank, passing the pleasure pills and taunting you to trade in your UB40 for a life of leisure. And what do you have to do? Frank would pass your task off as simple, but where do you start, Lenny Lowscore?

Having been trained in the Merseyside Mothers + Toddlers Muggers Association, you're already clued up on the finer points of breaking and entering.

Once inside the terraced treasure-trove, there's lotsa goodies for the taking — including those pleasure pills Frankie promised. Although most of the doors are already open, Tricia Tenant has left some handy keys around for those that aren't. Check out the kitchen, and amongst the clutter you'll see such delights as milk, fish and floppy disks. Not too exciting — but hang on to them, Frankie works in mysterious ways.

You've got a long journey ahead of you — don't overdose on the Pleasure pills, once your supply has run out you'll be lucky to find a pusher in Mundanesville. Relax Lenny Lowscore — those politically-hyped-arcade-games *aren't* just a fantasy of the pill popping antics — you've got to do well to prove yourself as a *real* person.

Once you're street wise enough, Frankie presents you with a game of psuedo-Cluedo. Miss Mundane lies dead in the sitting room, killed by an unknown object by an unknown person — solve that one Lenny, you'll need to to become a *real* person — remember!

Lust + Fear + Love + Faith x Frankie = a tough task for Lenny. Don't relax — go to it!

• The path to the Pleasuredome is perilous, so persevere. Our plan follows a typical game of *Frankie*. Just by looking at the background colours on the screens you can tell which of the pleasure measures will be affected by your actions. As soon as each of the four pleasure powers is filled to the brim, you're on your way to the big BANG! — at the top of each bar chart. As you can see we couldn't manage it — but then you probably know that we're not real people!

THE STREET

Follow the yellow brick road — to the pink door. Behind here you'll find an open back door that'll transport you onto another street. And if you want to watch telly, look out for the aerials.



Back to t'roots in Mundanesville, eh lad! You're going to find life ain't a bed of roses. When you start on your search, it's an idea to set off slowly, and systematically check everything.

Welcome to Coronation Street land. There are four identical streets in Frankie — only the colours of the doors change. Pink means the house has a back door and red tells you the second door in the kitchen leads to an arcade game.

+

BATTLE OVER MERSEYSIDE

This boxed-off bit lets you know how many bases you have left. If you're baseless then wave goodbye to the game.



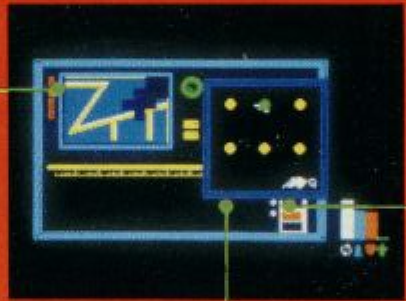
The planes aren't the problem — the bombs are. If you want to keep your bases then you're going to have to shoot down the bombs before they blow.

It may seem a trifle laid-back but our top tactic for this game is to sit in the middle and keep your finger on the fire button. As soon as you start jigging around, you'll start to miss everything.

+

THE ZTT ROOM

The aim of the game is to build the ZTT logo but to do it, you'll have to press the buttons in the right order. A handy hint is to start in the top left hand corner and finish where the finger is now.



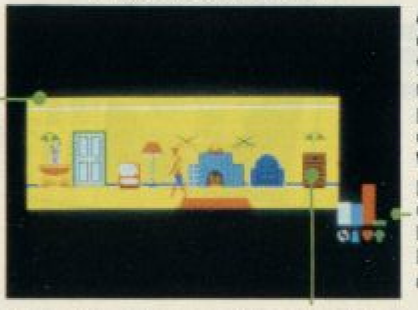
As soon as you've broken down the barrier at the beginning, this stairway springs into action.

Start by shooting down an armed barrier. The slow but safe method is to hotfoot it in, fire one shot then hightail it out again. Trouble is you'll be collecting your pension before you've finished.

+

THE SITTING ROOM

This ain't no Habitat heaven — more a Shabitat let-down. But you're going to have to check out every drawer, retirement clock and video recorder in your pursuit of Pleasure pills . . .



As things start to come right for you, Frankie rewards you with pleasure power on this bar graph. When all four peak, the equation: Lust + Fear + Love + Faith x Frankie is complete. BANG!

To open these drawers, you'll need to adopt the typical Merseyside strut — with arm outstretched. It's what your right arm's for! Sometimes you'll find, though, that it just isn't enough — and then you'll really have to stre-e-e-tch for the high spots.

+

MURDER, MYSTERY AND SUSPENCE

Give us a Cleudo — this has all the cloak'n'dagger elements of the full blown Basil Rathbone (no, not Baron Rathbone — BASIL! He made films stupido!)



You'll turn up clues to the whodunnit as you wander around the other rooms. It's elementary, my dear Frankie.

You've got no chance of answering the quiz until you've uncovered all the clues. So, if you wander back to this room and you're asked whodunnit, don't fret that you've missed a clue — Frankie says relax.

+

CLUEDO

Even defective detectives have a good chance here. Once you've found the body, the clues appear as if by magic. Being a gumshoe was never this cushy at the pictures.

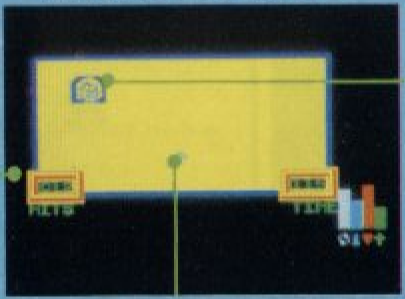


So, Miss Bland has a son in the RAF, huh? Well, if Frankie says the killer has no children then she's in the clear. Otherwise bear her in mind for the court case.

It's all a case of logical deduction. Write down the clues and cross off the suspects as you go. When you're left with just one name uncleared, set off for the sitting room and accuse your suspect.

e-e-tch for the high spots.

THE SHOOTING GALLERY

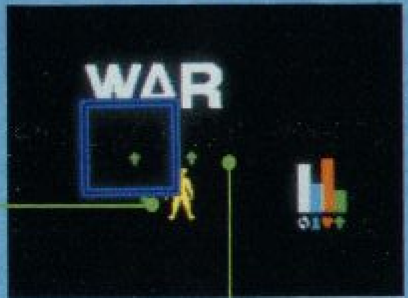


As you get better, the game gets harder — typical that! The number of hits you have to make increases rapidly — you start off needing only 21 in 200 but it can rocket to 25 or more.

It's Maggie — just one of the host of targets you have to shoot at — popping up at random on the firing range. Your best bet is to position yourself in the middle of the screen.

Your gun sight automatically returns to this point when you're not pushing it elsewhere. After you've shot a bullet, it's a good idea to let the sight fall back here for re-loading. It's trickier than you think trying to take aim yourself.

WAR — GO FOR IT . . .

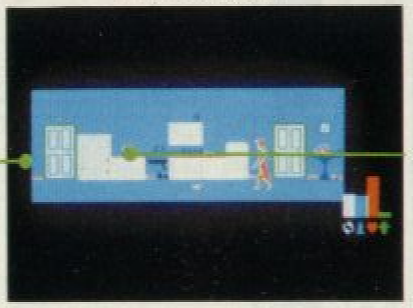


Every second or so, one of these windows pops up and fires out a pleasure symbol. All you have to do is shoot it as it flies past — and the pleasure is all yours.

As soon as you've popped a pleasure symbol another window will appear — just walk right into the next bit of arcade action.

If you miss a symbol and it hits you instead then you risk being put straight back onto the streets. And watch out if you're caught behind a window — you can get zapped without even realising it.

THE KITCHEN

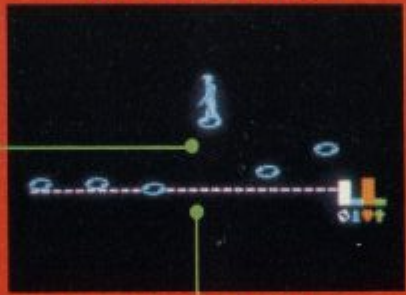


Leave here and you'll be back in back-to-back land on another Coronation Street-look-alike. But remember — there's a whole new set of objects to add to your collection there.

PLEASURE PILL! PLEASURE PILL! Wow, man, can hardly wait to get hold of the promised power-pushin', score-liftin', real-man-makin' antidotes to Mundanesville. Reeeeeelaxxx!

Here's everything plus the kitchen sink — but there's not much in the way of kitchen sink drama. You'll find the objects you're after in the drawers, fridge and on the worktops. The hot programs are keeping cool in the fridge — take them to the computer room to use them.

THE SEA OF HOLES

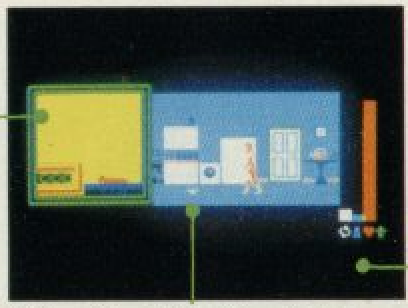


Worrisit then? Is it a skateboard? Is it a hula-hoop? No, it's the lust symbol on its edge — and it's just waiting to swallow you up.

You'll only have to take your chances on this game the once to earn your pleasure power, so steer well clear of it. Why? 'Cos it'll bore you all the way back to Mundanesville, that's why!

Here you have to make it to the purple line. Trouble is, it's all down to chance and where you're thrown out of the hole.

PUSSY GALORE



To enter the arcade, just walk into the window. It's a whole new world in there. Playschool eat your heart out!

The Power of Love. Too much attention to love makes the heart grow fonder but it ain't going to make you a real person — keep your eye on these so you can pop a pill if things get low.

Fill the cat's bowl with milk from the bottle and you'll probably run into the moggy as he comes for a quick slurp. As a reward, pussy will give you an arcade to play.

THE COMPUTER ROOM

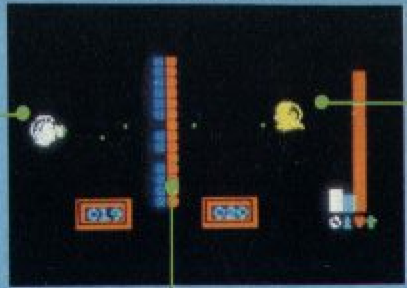


If you want to get passed, get a pass! You'll need security clearance to make your way round the computer, so remember to pick up a pass at the main gate.

Put your floppy disks into the computer but mind out — they have a nasty habit of being corrupted. Sounds remarkably like Microdrives!

For the power-crazy, this ornamental gateway leads you to the Corridors of Power. But this is no flak free zone — so, remember to take your flak jacket with you.

WAR OF WORDS



It's the boy-wonder of the B-movie, Ronnie Raygun. You take his part here on the left, while the Ruskies are on the right. Sounds like someone's got the politics slightly skew-whiff!

The Russians are coming — make sure you get 'em before they get you. Sacrifice one of your barriers and when the Moscow muppet is firing you only need to go up one step to shoot.

Your missiles make it through your layer of defences but break up the computer's. If you've got a partly destroyed defence barrier on your side, it'll build back to full strength if you fire at it.

THE CORRIDORS OF POWER



Hey, this is really way out, man. Actually, it's *the* way out — your escape route. From here it's back onto the streets or into another arcade game. But don't look for a plan — it's all random.

Jumpin' Jehosophat! Watch out for Frankie's great balls of fire while you're on your travels. Zap 'em and new doors shall be opened unto you!

As you make your mark in Mundaneville, you're gonna start clocking the wicker work gates. So, what are they there for? Well, c'mon in . . . you'll find yourself in surroundings not unlike these.

CASE SOLVED



So, Sherlock, you've solved the case — but don't come over all smug 'cos there's still some way to go before you become a real person and take a trip to that Pleasuredome.

If you can't crack the case then tough! — no way will Frankie let you carry on your quest for ultimate pleasure.

This time you've cracked the case, but it'll be a completely different story next game. And remember to make notes while playing the whodunnit or you'll have no chance of solving the mystery.

= LUST = FEAR = LOVE = FAITH

SPRITE HIGH, NO LIMIT

Calling all loony tunesmiths!* Chris Wood *is gonna show you how to create cartoon sized sprites and get 'em moving. Well, he's smarter than the average programmer ....

Yabbadubbadoo! It's cartoon time. That's right, if you've been dying to create your own games featuring favourite cartoon characters, the waiting is now over. How'd you like Wally waddling round your games? Or you could create your own Celtic cartoon to rival *Dun Darach*. Or even the *Flintstones?*

SHAPIN' UP

How big do you want your sprites? Well, the routine will let you handle sprites up to 31 × 24 character squares but the designer program only has room for 7 × 7 on screen. Anyhow, do you really want sprites much bigger than that? It makes playing Space Invaders a bit pointless if they're bigger than barn doors when you come to blast 'em! And you can still create sprites as large as those in *Dun Darach*.

Attributes are another problem associated with sprites. You can get round this by having your characters the same colour as the background like those in *Dun Darach* and *Tir Na Nog*. But with this program, sprites can have their own attributes like Wally and the gang, in *Everyone's A Wally*. Or, chameleon-like, they can turn the colour of whatever is behind them just as Frankie does.

OLD MASKERS

To mask or not to mask — this program lets you decide. A mask is merely a shape that masks out the part of the screen to which the sprite is moving before slotting the sprite into the hole left by the mask. Say you had a black sprite with a lot of white in it, without a mask — print it in front of a detailed background and you'd be able to see through the white areas of the sprite.

Now if you have a mask exactly the same size as your chosen sprite, it'll clear exactly the right area on the screen. Well, that's how its done in *Dun Darach*. Of course, you can always choose a mask one pixel bigger than your sprite all the way round for extra emphasis — the technique used in *Everyone's A Wally*.

ROUTINE PROCEDURE

The sprite routine holds a copy of the screen in high memory — that way all the work of printing the sprites is done out of sight — then downloads it to the normal screen memory where you can see it. Next it erases all the copy from high memory before handing back control to you. So, if you want to wipe out all the sprites from the screen, you can download the empty screen and bingo, they're gone!

PULLING RANK

You'll have noticed how sprites in professional games pass over each other without getting into a rare old mess. It's all down to priority, a sort of sprite pecking order. The sprite with the highest priority is the last one printed onto the screen and appears to be in front of all the others when it passes over them. Any sprites added to the list will have a lower priority than the others as the data block for each

DRAW NEAR

Have you decided which cartoon hero you're going to breathe life into? As soon as you're ready, this is the screen that'll greet you. You're asked for the width of your sprite in characters (bytes), the maximum is seven, and its height in pixels, maximum fifty-six. As you can see your life-size sprite appears in the top left of the screen as you draw on the nine times larger one in the middle. Use the cursor keys (or 5-8 on the Speccy+) to control the flashing cursor. The zero key turns a pixel on or off or if you prefer you can take a line for a walk by pressing the four key. The other important keys you'll need are as follows:

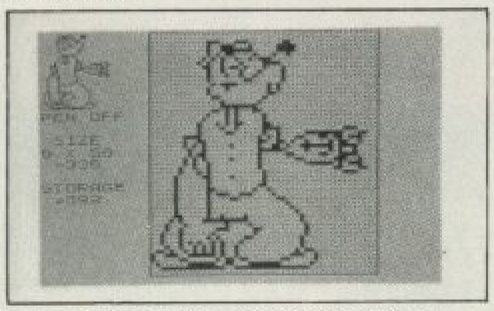
R recalls a sprite for retouching after it's been loaded into 47000 where it's stored in the Designer.

S as soon as you're satisfied with your sprite, this stores it in memory. You'll be asked 'save width?', so that if you need to change its width, the program will rearrange the data for the sprite. If you reckon it ought to grow up, just press Break and enter a larger height, then press **R** when you return to the design screen. Each sprite is saved with the name "SPRDAT nnn" where nnn is its length in bytes.

F for when you're ready to finish and save the sprite to tape.

Things start to get a bit hairy when you start slapping a mask onto your sprite. It's OK if you're just doing a same size mask like in *Dun Darach* as you only have to fill in the holes in the original sprite.

You're problems start when you try to outline masks — you fill in all the gaps easily enough but when it comes to going round the edge, oops you're going all over the shop. That's why I've incorporated the command C for 'check mask' — did you think I'd let you down? First load your sprite into 47000 and another copy into 48000. Next fill in the gaps and start off around the edge. When you get lost, press C and the mask and sprite will be printed together in the bottom left of the screen.



Here's the Sprite Designer in action. The large box in the middle of the screen is your editing window. While you create, the life-size sprite is shown taking shape in the box top left.

WALK THIS WAY

If you're confused about your next step as you try your hand at cartoon creation, this easy-to-follow guide will see you through.

Step 1: First create the scenery for your sprites. You'll find it easy with a package like *Melbourne Draw* or *The Artist*.

Step 2: Draw your sprites with the Designer program. But don't forget that you'll have to amend the old sprite for each new frame of animation.

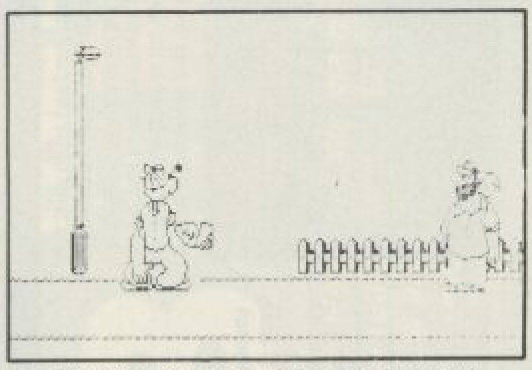
Step 3: Design a mask for each frame you've drawn. This feature is optional but it stops the background from showing through your sprites — unless you're writing a ghost story!

Step 4: Load in the Data Block program and answer all the questions it asks about your sprites. When that's done, save the code it creates.

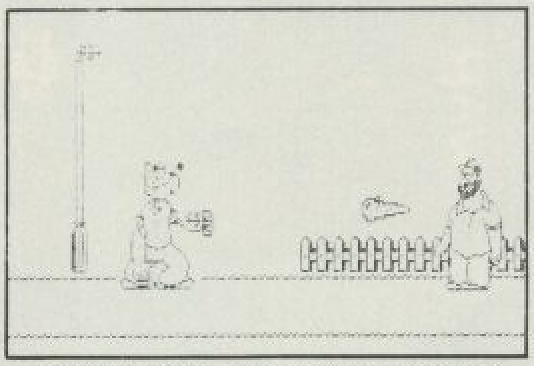
Step 5: Load up the Motion Picture program, your Sprite Code, Mask Code and the Data Block program. And remember you'll have to clear enough room in memory for that lot. You'll find that 30000 should be ridiculously adequate.

Step 6: Run the program and up'll come your very own cartoon. Use the cursor keys to control your chosen character. And as we movie people say, That's All Folks!

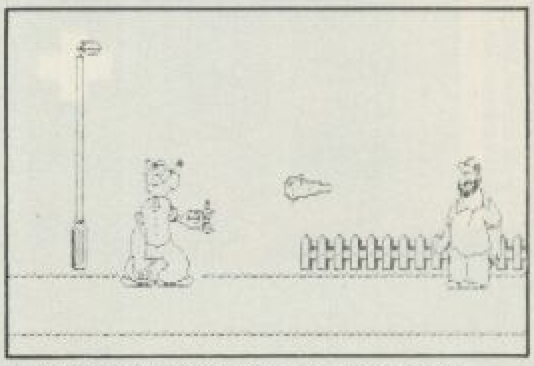
POPEYE IN 'PLAIN SAILING SPRITES'



The first two frames of the Popeye and Bluto sprites have been placed on the background...



...and now the club becomes a separate sprite as it flies across the screen.



Bluto and Popeye both have masks to prevent the background showing through their britches.

sprite is added lower down in memory and the front of the sprite queue is lowered to point to it.

Those of you who are up on your games have no doubt got your objections ready. How, I hear you ask, do the sprites in *The Rocky Horror Show* manage to go behind the scenery? Thought you'd catch me out, eh? Phah! Take a lamp post. Found one? Right now, say you've got five sprites you want to pass behind or in front of it. OK then, design the sprites and the lamp post but tell the Data Block program that you want eleven sprites — that's one lamp post, five normal sprites and five indentical, inactive sprites. The lamp post has a higher priority than the normal sprites so they appear to move behind it. But switch to the inactive sprites and the priorities swop around so the sprites now appear in front. Clever, innit? Now you can have some behind, some in front and others turning cartwheels around it, for all I care!

You've probably sussed that you're never going to have the normal and inactive sprites on the screen at the same time. That means they can share the same storage area and you'll only need one copy of the shape and mask data. It's a great way of saving space. Say you've got fifty sprites but only ten are on the screen at any one time, then provided they're all the same size, you can get away with only having ten storage areas. By the same token, one large sprite can provide a storage area for several smaller ones when it's off the screen. And all the different versions of the same sprite — left leg in, right leg out, shake it all about and so on — need only the one storage area.

If you fancy having a crack at 3D games like *Knightlore*, then this technique's going to come in very handy. Each room in these games is made up of eight by eight large squares. That means that each sprite needs eight different versions of its Data Block for the eight distances that it can be away from you — one row away, two rows and so on. And depending on how far up the screen objects and sprites are from each other, that alters the priorities you should allot them.

MAKING YOUR MOVES

Right, eyes down and away we go. Your first job is to design your screen background. It may be a loading screen or perhaps you've got a program that prints platforms and ladders. Whatever you choose, save it with RANDOMIZE USR 57813. That's plonked the whole lot safely up into high memory where it can be worked on. But say you only want to use part of the screen, remembering that the less that has to move, the faster the routine runs. That's why old clever clogs himself, Matthew Smith only used the top two thirds. You can choose any combination you want using POKE 57478, length of screen (24=full, 16=two thirds, 8=one third.)

If you want to use an area other than the top, POKE 57481, start of screen. (64=top, 72=middle, 80=bottom) POKE 57484,PEEK (57481)+165

You haven't forgotten the attributes, I hope! Use POKE 57484, length of

DECIMAL LOADER

Type in this loader and use it to enter the two blocks of code, one for the Designer and one for the Sprite code. Enter STOP when you've finished.

```
 100 INPUT "Start Address? ";s
 110 FOR n=s TO 1e9 STEP 8: PRIN
T n
 120 LET tot=0: FOR b=0 TO 7: IN
PUT "number? ";a: PRINT a;",";:
POKE n+b,a: LET tot=tot+a: NEXT
b
 130 INPUT "checksum? ";c: IF c<
>tot THEN PRINT : BEEP .1,0: PR
INT "WRONG": GO TO 120
 140 PRINT : NEXT n
```

DESIGNER BASIC

Type in the Designer program and then save it with SAVE "DESIGNER" LINE 9999 with the code after it on the tape. That way it'll load the code and run it.

The Designer tells you the amount of room taken up by the sprite or its mask and the storage area. Each sprite needs fourteen bytes of data, twelve of which tell it where it is on the screen, whether it has a mask, or attributes and where its shape is stored. The other two bytes contain a pointer to the area of memory telling it where it can store a copy of the background on which it sits.

If you don't give your sprite a mask, you needn't reserve memory for it but you'll always need a storage area for the part of the screen that's printed over. This must be one byte wider than the sprite and the same depth.

```
   1 INPUT "WIDTH in bytes? ";q:
 POKE 45010,q: POKE 45151,q: INP
UT "HEIGHT in pixels? ";p: POKE
45007,p: POKE 45134,p
```

Line 1 This finds out what sort of dimensions you want for your sprite. You can change the width during program running, but you can't change the height — so make your choices carefully.

```
   5 POKE 23658,0: PRINT AT 7,0;
"PEN OFF";AT 9,0;" SIZE"'q;" x "
;p'" =";q*p''"STORAGE"'" =";(q+1
)*p
   8 LET pl=0: BORDER 6: LET x=0
: LET y=175: PLOT 71,175: DRAW 2
4*q+1,0: DRAW 0,-3*p-1: DRAW -24
*q-1,0: DRAW 0,3*p+1
   9 RANDOMIZE USR 45000
```

Lines 5-9 This prints the pen information down the side of the editing window and then draws the window itself to the required size.

```
  10 LET x=x+(INKEY$="8" AND x<>
q*8-1)-(INKEY$="5" AND x<>0)
  20 LET y=y+(INKEY$="7" AND y<>
175)-(INKEY$="6" AND y<>176-p)
  25 IF INKEY$="s" THEN BEEP .1
,20: INPUT "Save width ? ";q: PO
KE 45010,q: POKE 45151,q: POKE 4
5159,235: POKE 45149,235: RANDOM
IZE USR 45124: GO TO 50
  26 IF INKEY$="r" THEN BEEP .1
,30: GO TO 50
  30 IF INKEY$="4" THEN BEEP .0
1,20: LET pl=1-pl: PRINT AT 7,0;
"PEN ";("ON " AND pl=1);("OFF" A
ND pl=0)
  32 IF pl=1 THEN PLOT OVER 1;
x,y: GO SUB 900
  35 IF INKEY$="0" THEN BEEP .0
1,20: PLOT OVER 1;x,y: GO SUB 9
00
  36 IF INKEY$="c" THEN POKE 45
159,235: POKE 45149,235: RANDOMI
ZE USR 45124: POKE 45159,0: POKE
 45149,0: POKE 45153,47: POKE 45
129,120: RANDOMIZE USR 45124: BE
EP .1,0: POKE 45153,182: POKE 45
125,128: POKE 45126,187: RANDOMI
ZE USR 45124: POKE 45153,0: POKE
 45125,152: POKE 45126,183: POKE
 45129,0
  38 IF INKEY$="f" THEN SAVE "S
PRDAT "+STR$ (p*q)CODE 47000,p*q
  40 PLOT OVER 1;x,y: PLOT OVE
R 1;x*3+73,173-((175-y)*3)
  41 BEEP .01,-28: PLOT OVER 1;
x,y: PLOT OVER 1;x*3+73,173-((1
75-y)*3): GO TO 10
```

Lines 10-41 This is the main loop. Most of this is just IF...INKEY$= stuff, calling the other parts of the program. If you don't like the small cursor you can change lines 40 and 41 to read:
40 PLOT OVER 1;x;y: GOSUB 900
41 PLOT OVER 1;x;y: GOSUB 900: GO TO 10
but if you do, it'll be a fair bit slower. If you like the cursor, but don't like the constant beeping you could change the beep in line 41 to -30.

```
  50 CLS : POKE 45159,0: POKE 45
149,0: RANDOMIZE USR 45124: GO T
O 5
```

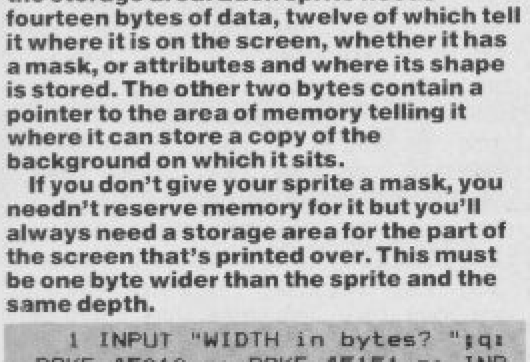
Line 50 This line clears the screen ready for a re-draw.

```
 900 PLOT OVER 1;x*3+72,174-((1
75-y)*3): DRAW OVER 1;2,0
 901 PLOT OVER 1;x*3+72,172-((1
75-y)*3): DRAW OVER 1;2,0
 902 PLOT OVER 1;x*3+72,173-((1
75-y)*3): DRAW OVER 1;2,0
 904 PLOT OVER 1;x*3+73,173-((1
75-y)*3)
 910 RETURN
```

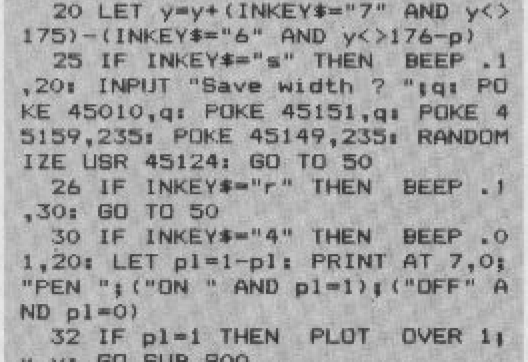
Lines 900-910 This subroutine draws the window 'box'.

```
9999 CLEAR 44999: LOAD ""CODE 45
000: RUN
```

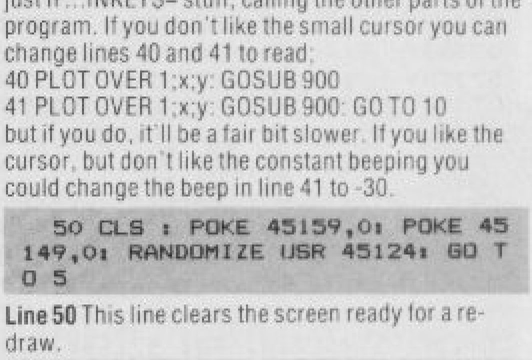
Line 9999 This is the set-up line to load in the machine code from tape.



Bluto is now stationary as the club whizzes toward Popeye's bonce. But he's strong to the finish 'cos he eats his spinach!



The priority of the sprites tells the club to go behind Popeye...



...but in front of the lampost. And that's it — six frames of cartoon animation using the features of Sprite High.

SPRITE HIGH, *NO LIMIT*

attributes = 3,2 or 1 third. And then there's the starting point: POKE 57492, starting point. (88=top, 89=middle, 90=bottom.) POKE 57495, PEEK (57492)+165.

When you change the starting point, remember to change the length as well or you run the risk of going off the bottom of the screen and wiping out Basic. Nasty!

Stringing it all together, here's an example that uses the bottom two thirds of the screen, leaving the top free for scores or whatever:

POKE 57478,16:POKE 57481,72: POKE 57484,PEEK (57481)+165:POKE 57489,2:POKE 57492,89:POKE 57495,PEEK (57492)+165

Finally, to call back your picture and effectively wipe all your sprites off the face of the screen, use RANDOMIZE USR 57836.

And I don't know why you're sitting there as though you've got all day — you'd jolly well better start typing in the listings. Like now!

DESIGNER CODE

Use the Decimal Loader to enter this code. Enter the start address, 45000, when you're asked, then type in the numbers eight at a time followed by the checksum for each line. If you make a mistake, just enter the line again. When you've finished, save the code with SAVE "DES CODE" CODE 45000,16 — but you must save it after Designer Basic on your tape.

```
45ØØØ:   33,  Ø,  Ø, 34,249,175,  6, 16, =513
45ØØ8:  197,  6,  2,197,237, 75,249,175, =1138
45Ø16:  12Ø,2Ø5,177, 34,  6,  8,126,197, =873
45Ø24:   23,245,2Ø5,251,175,241,193, 16, =1349
45Ø32:  246,193, 16,231, 42,249,175, 46, =1198
45Ø4Ø:    Ø, 36, 34,249,175,193, 16,216, =919
45Ø48:  2Ø1,  Ø,  Ø, 56, 13,2Ø5, 41,176, =692
45Ø56:   12,  4,12Ø,2Ø5,177, 34,195,236, =983
45Ø64:   34,2Ø1,2Ø5, 41,176, 62,  3,245, =967
45Ø72:  197, 62,  3,245,197,12Ø,2Ø5,177, =12Ø6
45Ø8Ø:   34,2Ø5,236, 34,193, 12,241, 61, =1Ø16
45Ø88:   32,241,193,  4,241, 61, 32,231, =1Ø35
45Ø96:  2Ø1,237, 75,249,175, 12,237, 67, =1253
451Ø4:  249,175, 13,237, 75,249,175, 42, =1215
45112:  249,175, 41,  9,  1, 69,  Ø,  9, =553
4512Ø:   68, 77,  4,2Ø1, 17,152,183, 33, =735
45128:    Ø,  Ø, 34,249,175,  6, 16,197, =677
45136:  237, 75,249,175,12Ø, 6Ø, 5Ø,25Ø, =1216
45144:  175, 61,2Ø5,177, 34,235,  6,  2, =895
45152:   26,  Ø,119, 19, 35, 16,249,235, =699
4516Ø:  193, 16,228,2Ø1,  Ø,  Ø,  Ø,  Ø, =638
```

SPRITE CODE

Sprites here we come! Again using the loader program, type in the code in the same way as you did with the Designer code. Done that? Now save it with SAVE "SPR CODE" CODE 57270,584.

```
5727Ø:   16, 16,  6,  1,  Ø,  2,  Ø, 16, =57
57278:   64,156,136,156,24Ø,21Ø,135,131, =1228
57286:  153,13Ø,152,147, 2Ø, 2Ø,  6,  1, =629
57294:    Ø,  2,  Ø, 16, 64,156,136,156, =53Ø
573Ø2:  24Ø,21Ø,  Ø,  Ø, 2Ø, 2Ø, 88,255, =833
5731Ø:   88,255,  1,243,221, 33,182,223, =1246
57318:  237, 75,223,223,197,221,229,225, =163Ø
57326:    1, 14,  Ø,221,  9, 17,2Ø2,223, =687
57334:  237,176, 58,2Ø5,223,167,2Ø2,127, =1395
57342:  224, 42,212,223, 34,222,223, 42, =1222
5735Ø:  21Ø,223, 34,22Ø,223, 42,2Ø2,223, =1377
57358:   34,218,223,237, 75,218,223,12Ø, =1348
57366:  2Ø5,177, 34, 34,216,223, 5Ø,2Ø6, =1145
57374:  223,217,237, 91,214,223,217,237, =1659
57382:   75,2Ø8,223,197,237, 75,218,223, =1456
5739Ø:  12Ø, 6Ø, 5Ø,219,223, 61,23Ø,  7, =97Ø
57398:   4Ø,  6, 42,216,223, 36, 24,  5, =592
574Ø6:  12Ø,2Ø5,177, 34, 36, 34,216,223, =1Ø45
57414:   37, 62,165,132,1Ø3,229,2Ø5, 13, =946
57422:  225, 58,2Ø8,223,167, 32, 19, 5Ø, =982
5743Ø:   95,225, 33, 47,166, 34,1Ø2,225, =927
57438:   17, 32, 91,225,229,2Ø5, 89,225, =1113
57446:   62,  6, 61, 5Ø, 95,225, 33,182, =714
57454:    Ø, 34,1Ø2,225, 17,  Ø, 91,225, =694
57462:  2Ø5, 89,225,193, 16,173,2Ø5,131, =1237
5747Ø:  225,193,  5,194,234,223,  1,  Ø, =1Ø75
57478:   24, 17,  Ø, 64, 33,  Ø,229,237, =6Ø4
57486:  176,  1,  Ø,  3, 17,  Ø, 88, 33, =318
57494:    Ø,253,237,176,  1,  Ø,  3, 17, =687
575Ø2:    Ø,253, 33,  Ø,226,237,176,237, =1162
5751Ø:   75,223,223,197,221,229,225,  1, =1394
57518:   14,  Ø,183,237, 66,229,221,225, =1175
57526:   17,2Ø2,223,237,176, 58,2Ø5,223, =1341
57534:  167, 4Ø, 71,237, 75,2Ø2,223,237, =1252
57542:   67,218,223,12Ø,2Ø5,177, 34, 34, =1Ø78
5755Ø:  216,223,237, 75,2Ø8,223,237, 91, =151Ø
57558:  214,223,197,237, 75,218,223,12Ø, =15Ø7
57566:   6Ø, 5Ø,219,223, 61,23Ø,  7, 4Ø, =89Ø
57574:    6, 42,216,223, 36, 24,  5,12Ø, =672
57582:  2Ø5,177, 34, 36, 34,216,223, 37, =962
5759Ø:  237, 75,2Ø7,223, 12,  6,  Ø,235, =995
57598:   62,165,13Ø, 87,237,176,235,193, =1285
576Ø6:   16,2Ø8,193, 16,158,251,2Ø1,175, =1218
57614:  237, 75,2Ø7,223, 71,197, 42,22Ø, =1272
57622:  223, 17,  Ø, 91,237,176, 18, 34, =796
5763Ø:  22Ø,223,193, 58,2Ø8,223,167, 32, =1324
57638:   12, 42,222,223, 17, 32, 91,237, =876
57646:  176, 18, 34,222,223, 58,2Ø6,223, =116Ø
57654:  167,2ØØ, 33,  Ø, 91,2Ø5, 7Ø,225, =991
57662:   58,2Ø8,223,167,192, 33, 32, 91, =1ØØ4
5767Ø:  237, 75,2Ø6,223,  4,229,197,167, =1338
57678:  2Ø3, 3Ø, 35, 16,251,193, 13,225, =966
57686:   32,243,2Ø1,237, 75,2Ø6,223,  4, =1221
57694:   24,  5,126,217, 18, 19,217, 26, =652
577Ø2:    Ø,  Ø,119, 19, 35, 16,241,2Ø1, =631
5771Ø:  147,152,13Ø,153,131,135,2Ø5,177, =123Ø
57718:   34,124, 15, 15, 15,23Ø,  3,246, =682
57726:   88,198,165,1Ø3,2Ø1, 58,2Ø4,223, =124Ø
57734:  167,2ØØ,237, 75,2Ø2,223,12Ø,2Ø5, =1429
57742:  116,225,237, 75,2Ø6,223, 58,2Ø2, =1342
5775Ø:  223,23Ø,  7, 4Ø,  1,  4, 58,2Ø3, =766
57758:  223,23Ø,  7, 95, 58,2Ø9,223,131, =1176
57766:   31, 31, 31,23Ø, 31, 79, 58,2Ø9, =7ØØ
57774:  223,23Ø,  7, 4Ø,  1, 12, 58,2Ø3, =774
57782:  223,23Ø,  7, 4Ø,  1, 12,12Ø, 5Ø, =683
5779Ø:  2Ø6,223, 17, 32,  Ø,229, 58,2Ø6, =971
57798:  223, 71, 58,2Ø4,223,119, 35, 16, =949
578Ø6:  252,225, 25, 13, 32,239,2Ø1, 17, =1ØØ4
57814:    Ø,229, 33,  Ø, 64,  1,  Ø, 27, =354
57822:  237,176, 17,  Ø,226, 33,  Ø, 88, =777
5783Ø:    1,  Ø,  3,237,176,2Ø1,  1,  Ø, =619
57838:   27, 17,  Ø, 64, 33,  Ø,229,237, =6Ø7
57846:  176,2Ø1,  Ø,  Ø,  Ø,  Ø,  Ø,  Ø, =377
```

DATA BLOCK PROGRAM

When you've designed all your sprites and worked out where they should be in memory, you can type in this program. It'll ask you how many sprites you want for the co-ordinates of each one, the attributes and whether they have a mask. After the block for each sprite's been worked out, it'll print the info on the screen — it's an idea to jot it down or take a print-out of the screen for later. The number printed above each, tells you the priority of the sprite.

Whatever you do, note down the first location printed as you'll have to POKE this into the sprite code to tell it where the data starts. Use:

INPUT n: POKE 57317, INT (n/256): POKE 57316, n(PEEK 57317*256)

after you've loaded the Sprite code. When you've finished entering all the data, the program is saved with the name "BLOCKS nnn" where nnn is the number of sprite blocks.

If you want to add a sprite to your data block, load it in, run the program and tell it the new number of sprites. Once you've entered the first one, enter STOP and then GOTO 150 — the program will then save the new block.

When all your cartoon characters are in the bag, POKE 57312 with the number of your sprites and after saving the screen to high memory, you can type RANDOMIZE USR 57313 to print them all onto the screen. So, wassup Doc? Oh, you want animation? Keep movin' then!

```
  10 INPUT "Number of sprites? "
;n
  15 LET r=n*14: LET s=57284-r
  20 FOR p=1 TO n
```

Lines 10-20 This sets up the number of sprites and then start off the For...Next loop.

```
  30 INPUT "x coord? ";x: POKE s
,x
  40 INPUT "y coord? ";y: POKE s
+1,y
```

Lines 30-40 These lines collect the x and y co-ordinates of the sprite.

```
  50 INPUT "attribute? ";a: POKE
 s+2,a
```

Line 50 This line collects the colour of the sprite.

```
60 INPUT "active? ";a: POKE s+
3,a
```

Line 60 This line asks whether the sprite is active or not. This should normally be set to zero and then turned on (ie. set), when needed.

```
70 INPUT "width in bytes? ";w:
POKE s+5,w
80 INPUT "height in pixels? ";
h: POKE s+7.h
```

Lines 70-80 These lines collect the dimensions of the sprite.

```
90 INPUT "mask? (y or n)";a$:
POKE s+6,1: IF a$="y" THEN  POKE
s+6,0
```

Line 90 Is your sprite wearing a mask? This line will find out.

```
100 INPUT "shape data address?
";sd: LET a=INT (sd/256): LET d=
sd-(a*256): POKE s+8,d: POKE s+9
,a
```

Line 100 This line collects the address at which you want to store the data for the shape of your sprite.

```
110 INPUT "mask data address? "
;sd: LET a=INT (sd/256): LET d=s
d-(a*256): POKE s+10,d: POKE s+1
1,a
```

Line 110 If you've got a mask, tell this line where you've put it in memory. If you haven't, simply enter zero.

```
120 INPUT "storage area address
? ";sd: LET a=INT (sd/256): LET
d=sd-(a*256): POKE s+12,d: POKE
s+13,a: CLS
```

Line 120 The storage area address is the bit of memory where you have to put a copy of the screen that your sprite is obliterating — component frames of a sprite, ie its animations, can use the same area of memory to store the screen.

```
130 PRINT "SPRITE ";n-p+1: PRIN
T : FOR q=s TO s+13: PRINT PEEK
q,q: NEXT q
140 LET s=s+14: NEXT p
150 SAVE "BLOCK"+STR$ nCODE 572
84-r,r
```

Line 130-150 This last block prints out the data information for the user, loops back if necessary and then saves the code.

MOTION PICTURES

Right, we're on the move. If you've followed the instructions up to now, you're ready to turn your sprites into real cartoons. You'd better make a start on this program, then load and run it. You'll be asked the total number of frames for all the sprites and then the number of animations for each. It'll then animate all the sprites and allow you to move the first one under cursor control. Remember this is a sprite you're moving not just a frame, so if sprite one has four frames they'll all be recognised as sprite one.

Press Break and you can change the sprite you're controlling by altering the value of SP to any number up to the maximum number of your sprites. If you change the value of P, also in line 80, you can amend the number of pixels you control.

```
10 INPUT "Total No. of frames?
";n: DIM a(n): DIM b(n): DIM c(n
):, POKE 57312,n
20 LET r=n*14: LET s=57284-r:
LET b=n: LET num=0: LET q=INT (s
/256): POKE 57317,q: POKE 57316,
s-(q*256)
```

Lines 10-20 These lines ask the user exactly how many sprites he wants to animate in total (that is, how many frames there are) and then sets up the dimensions and control routines accordingly.

```
30 INPUT "Number of animations
?";a: IF a>b OR a=0 THEN  GO TO
30
40 LET a(num+1)=b-a+1: LET b(n
um+1)=b+1: LET c(num+1)=b-a+1
50 FOR q=b TO b-a+1 STEP -1: P
RINT q;",";: NEXT q: PRINT : PRI
NT : LET b=b-a: LET num=num+1
```

Lines 30-50 This part of the program finds out how many animations are to be used for each sprite.

```
60 IF b<>0 THEN  GO TO 30
```

Line 60 After the program has checked to see how many frames have been 'used', it then goes back to find out what else needs animating if there are any frames unaccounted for.

```
80 LET sp=1: LET x=20: LET y=2
0: LET p=2
```

Line 80 This line sets up the basic control variables for the sprites. The sp variable tells the program which sprite is current, the x and y variables are the co-ordinates for the sprite and the p variable is the sprite's priority.

```
200 FOR n=1 TO num
210 LET g=a(n)
220 LET s=57284-(g*14)
230 POKE s+3,0: LET g=g+1
240 LET l=b(n)
250 IF g=l THEN  LET a(n)=c(n):
LET g=a(n)
260 LET a(n)=g: LET s=57284-(g*
14)
270 IF n=sp THEN  LET x=x+p*((I
NKEY$="8")-(INKEY$="5")): LET y=
y+p*((INKEY$="6")-(INKEY$="7")):
POKE s,x: POKE s+1,y
280 POKE s+3,1: NEXT n
290 RANDOMIZE USR 57313: GO TO
200
```

Lines 200-290 This is the main loop of the program. Line 270 is the interesting line which you might want to rip out for use in your own programs — this actually moves the sprites while the rest of this section deals with animating them.

THE END OF



Single Letter Keyword Entry ...
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Three Character Sizes ...
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64 Column Text ...
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It all began with the ZX80 ...the first personal computer retailing for under £100. Next, Sinclair Research announced the ZX81, offering memory expansion to 16K. Completing the ZX series of micros came the Spectrum and its big brother, the Spectrum+.

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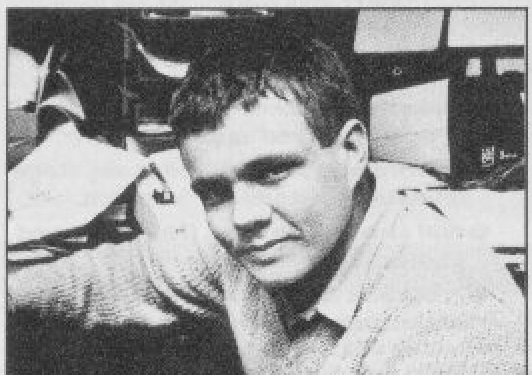
Incorporating many of the best features of Basics found on some of the Spectrum's major rivals (such as the BBC Micro, CBM 64 and Amstrad computers), *YS MegaBasic* gives you the opportunity to unleash power normally associated with machine code!

The program itself uses 19K of RAM, leaving you with 22K to write your own *YS MegaBasic* programs. It may seem as though you've lost a lot of memory, but you'll find you don't need so much code to create on-screen effects with *YS MegaBasic.* Anyway, when was the last time you wrote a program larger than 22K?

At Last! A Real Keyword Entry System

If you've ever suffered from cramp when you're playing double-octaves over the Spectrum's keyboard accessing some of those 'hard-to-get-at' commands ... then despair no longer.

YS MegaBasic incorporates a *real* single-letter keyword entry system. And before you start thinking this is going to mean more typing, *YS MegaBasic* allows most commands to be abbreviated. For example, you'd type 'RA.' instead of 'RANDOMISE'.



The man behind *YS MegaBasic* — Mike Leaman.

KEY FEATURES OF YS MEGABASIC

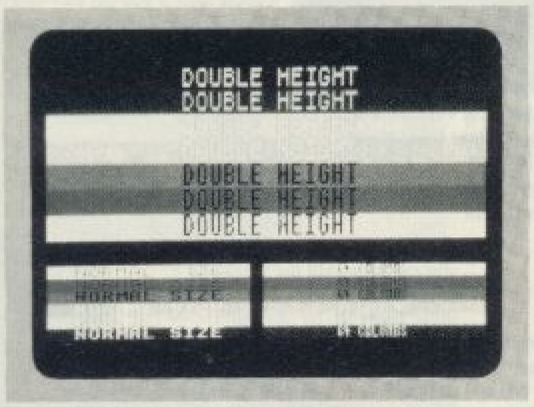
- *An extended command set. YS MegaBasic recognises over 35 new commands, which allow you to access the new features available as well as providing the opportunity to make more of the commands in standard ZX Basic.*
- *64 columns of text. Useful for wordprocessing and database applications.*
- *Three character sizes. Using **YS MegaBasic**, you've now the choice of accessing double-height, standard and half-width characters.*
- *Three character fonts. **YS MegaBasic** offers three font styles which allow your Spectrum to mimic other machines on the market.*
- *Windows. You can manage up to six QL-style windows on-screen at any one time.*
- *Sprites. Using the free **Sprite Designer** package that accompanies each copy of **YS MegaBasic**, you'll be able to design and manipulate up to ten sprites on-screen at once!*
- *Enhanced sound. Mike Leaman's taken the Spectrum's BEEP command and given it the full Mega-treatment.*
- *Procedures. Structure your programs and define new commands — it's all here!*
- *Stippled characters. QL-style stipples allow you to mix colours on-screen to give interesting colour effects.*

ZX BASIC?

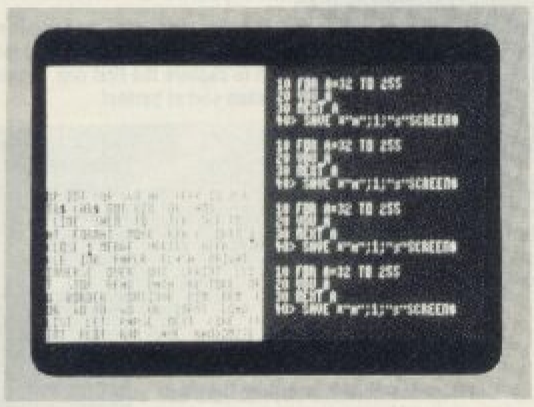
Sprite Designer — Free With Each Copy Of YS MegaBasic!

Included in the *YS MegaBasic* package, you'll find a special utility program called *Sprite Designer.* Written by Mike Leaman in *YS MegaBasic*, this 11K program is designed to help you create sprites on the Spectrum.

You can have up to ten sprites on-screen at any one time, but if you're careful with memory you can get more!



Here, *YS MegaBasic* is showing off its multifarious character sizes and fonts. Each window contains text in three different sizes: double height, normal height and that used for 64-columns; double height and standard text can be output in three different fonts.



The screen format for the input/output of *YS MegaBasic*. Three windows are provided for input, LISTing and RUNning programs; under software control, each window's size and purpose can be changed to suit individual requirements.

YS MegaBasic

Available only by mail order and only from

Your Spectrum

Your Spectrum, YS MegaBasic Offer, Sportscene Specialist Press, 14 Rathbone Place, London W1P 1DE.

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Thousands of clever *YS* readers have now upgraded their Spectrums to the status of MegaSpectrums with a copy of *YS MegaBasic.* But there are still plenty of you who can't quite believe the claims we've made for the program. Well, you don't have to take our word for it, listen to **Tony Wise** a reader from North Yorkshire. "Mike Leaman deserves a knighthood for *YS MegaBasic.* It must stand as the classic Speccy program of all time." Need we say more?

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ROAD RUNNER

Beep, beep! Vortex's new game,* Highway Encounter *goes on the road.* Join Ross Holman *as he follows the Highway code...

ROAD HOGS

The cyclops aliens shouldn't cause too many problems. They only change direction if they hit something.

Naaasty. The discs bob and weave and give the impression that they can home in on you.

You can move the barrels by pushing or shooting them.

Eye, eye. These are much nastier as they're programmed to change direction after a random time.

If you try to shoot the brick walls they just crumble, slowly disintegrating into thin air.

The blocks can only be moved by shooting them. Nobody pushes them around.

Heard the one about the wide mouthed frog? — these are related. They change direction after very short random times.



First time out, it's an idea to build up confidence by taking cover behind the walls and zapping the aliens as they come past. Or you can always use the barrel as a shield. Sneaky that!

Here you'll have to use some *Knightlore* type tactics of moving objects around the screen. It's the only way to clear a safe passage up the middle of the road for the Lasertron.

Push the two ba pulsating mines column. Then the laser and ar safe.

Here it's a case of the immovable objects meeting the irresistible force. The glass cubes can't be moved, so you've either got to go round them or through the gap in the middle.

Enter this zone on the central track and prepare for battle. Three one eyed aliens come straight for you but they're pretty thick and can only move in straight lines until they hit something.

If you let any aliens escape alive, go back and get 'em. They'll only cause trouble later if you get soft-hearted about zapping them in the back.

There's an alien here — a particularly vicious disc — but he's playing hide 'n' seek inside the blocks. A sort of out of sight out of mined!

With the Vortons tucked up safely, you can advance alone into the next zone. There the first aliens are ready and waiting to be blasted into oblivion.

Great balls of fire. Vortons aren't flameproof so steer clear of the flickering torches.

Your Vortons have run slap bang into the first barrier. You can move the oil drums by pushin' or shootin' 'em, but it's an idea to leave your troops behind them.

ZONE 30

Take out the first one, then rotate to one side and catch another on the run. The last one plus a fourth straggler can be picked off as they return to this zone.

Don't get too trigger happy here — you can only shift the blocks by shooting them and you don't want to move them too far, do you?

A really nice touch and one that sets it apart from the Ultimate games, is that you can move objects and fire from one screen into another. But be careful if you fire behind you — you won't know what you've moved till it's too late.

Here they are lining up behind the Lasertron as the master Vortan looks on. And as soon as they're off, get ready to roll yourself — you'll be riding shotgun on the road to Zone zero.

Now you can e nasty and hope y before he does it be sneaky! Blast you can just see up on the diagon

If you're looking for originality, it starts here. You've got four lives but don't expect them to sit patiently at the bottom of the screen — they're coming with you!

No through road! If you don't want to go to the wall, you can blast the brickwork between the flames before trekkin'on through.

It's not too tricky to trap the mines once you've used the block on the left to capture the first one. Practice makes sort of perfect.

As you enter this zone, you'll find there'll still be a couple of aliens waiting to shoot their mouths off at you. Stay still and blast them as they move towards you.

It's all been a summer holiday up till now — from here on the meanies get really mean. Fire into the next zone to zap a few before going in — you'll hear when you hit one.

ZONE 21

It's a real doddle to deal with these mines. Shoot the right hand barrel so that the two mines are bouncing off it. Then shift it over to the left side of the road to trap them.

Luckily the aliens are pretty gormless in this zone. Put the brakes on just past the raised tiles and pick off as many of the daft aliens as possible.

Be extra careful if you're on your last life especially if you're pushing the Lasertron. If you're not exactly on the centre line, you'll have had your chips. Line up the centre line with the groove on the Vorton's back.

Now you're getting close but this is the calm before the storm. Best to take a breather here before the final onslaught.

Use the barrels and a pile of bricks to back the mines up against the wall. You can't destroy them, so just keep them out of harm's way.

Make sure this isn't one bridge too far for you — beware the bigmouths on the bulwarks!

Rumours that these aliens were based on Troubleshootin' Pete are completely unfounded. But watch that mouth move!

It's a good idea at this point to belt on back to the beginning and collect your spare lives and the Lasertron. They'll be safe here behind the barrels.

Mad the s alien

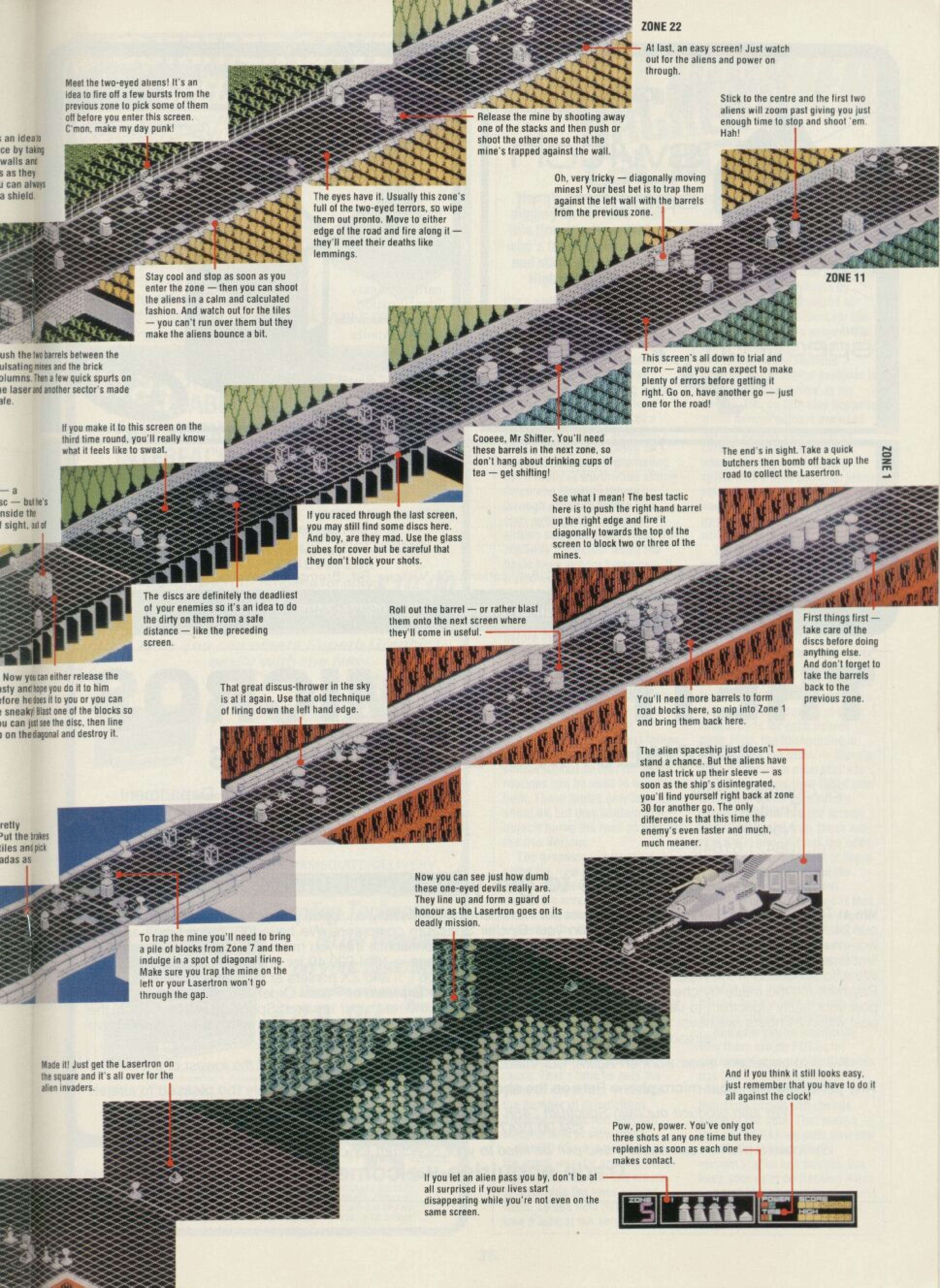
There are hidden nasties here but you can't keep the trap shut forever. Just make sure that you've killed all their comrades before tackling them. A good move is to keep on firing up the left hand edge till you've annihilated the lot.

This is a good place to beetle off back down the highway and collect the Lasertron and your spare lives — if you've got any left, of course.

Keep that central zone clear. The Lasertron and the spare Vortons never deviate from the centre path, so make sure nothing comes in their way.

ZONE 10

ZONE 0



ZONE 22
At last, an easy screen! Just watch out for the aliens and power on through.
Meet the two-eyed aliens! It's an idea to fire off a few bursts from the previous zone to pick some of them off before you enter this screen. C'mon, make my day punk!
Release the mine by shooting away one of the stacks and then push or shoot the other one so that the mine's trapped against the wall.
Stick to the centre and the first two aliens will zoom past giving you just enough time to stop and shoot 'em. Hah!
s an idea to
ce by taking
walls and
s as they
u can always
a shield.
Oh, very tricky — diagonally moving mines! Your best bet is to trap them against the left wall with the barrels from the previous zone.
The eyes have it. Usually this zone's full of the two-eyed terrors, so wipe them out pronto. Move to either edge of the road and fire along it — they'll meet their deaths like lemmings.
Stay cool and stop as soon as you enter the zone — then you can shoot the aliens in a calm and calculated fashion. And watch out for the tiles — you can't run over them but they make the aliens bounce a bit.
ZONE 11
ush the two barrels between the
ulsating mines and the brick
olumns. Then a few quick spurts on
he laser and another sector's made
afe.
This screen's all down to trial and error — and you can expect to make plenty of errors before getting it right. Go on, have another go — just one for the road!
If you make it to this screen on the third time round, you'll really know what it feels like to sweat.
Cooeee, Mr Shifter. You'll need these barrels in the next zone, so don't hang about drinking cups of tea — get shifting!
The end's in sight. Take a quick butchers then bomb off back up the road to collect the Lasertron.
ZONE 1
— a
sc — but he's
nside the
f sight, out of
See what I mean! The best tactic here is to push the right hand barrel up the right edge and fire it diagonally towards the top of the screen to block two or three of the mines.
If you raced through the last screen, you may still find some discs here. And boy, are they mad. Use the glass cubes for cover but be careful that they don't block your shots.
The discs are definitely the deadliest of your enemies so it's an idea to do the dirty on them from a safe distance — like the preceding screen.
Roll out the barrel — or rather blast them onto the next screen where they'll come in useful.
First things first — take care of the discs before doing anything else. And don't forget to take the barrels back to the previous zone.
Now you can either release the
asty and hope you do it to him
efore he does it to you or you can
e sneaky. Blast one of the blocks so
ou can just see the disc, then line
p on the diagonal and destroy it.
That great discus-thrower in the sky is at it again. Use that old technique of firing down the left hand edge.
You'll need more barrels to form road blocks here, so nip into Zone 1 and bring them back here.
The alien spaceship just doesn't stand a chance. But the aliens have one last trick up their sleeve — as soon as the ship's disintegrated, you'll find yourself right back at zone 30 for another go. The only difference is that this time the enemy's even faster and much, much meaner.
retty
Put the brakes
tiles and pick
adas as
Now you can see just how dumb these one-eyed devils really are. They line up and form a guard of honour as the Lasertron goes on its deadly mission.
To trap the mine you'll need to bring a pile of blocks from Zone 7 and then indulge in a spot of diagonal firing. Make sure you trap the mine on the left or your Lasertron won't go through the gap.
Made it! Just get the Lasertron on the square and it's all over for the alien invaders.
And if you think it still looks easy, just remember that you have to do it all against the clock!
Pow, pow, power. You've only got three shots at any one time but they replenish as soon as each one makes contact.
If you let an alien pass you by, don't be at all surprised if your lives start disappearing while you're not even on the same screen.
ZONE
5
POWER
TIME
SCORE
HIGH

ROAD RUNNER
HACKER'S GUIDE

There's always someone digging up the road. Well, this time it's *Dave Nicholls* who's taken the tarmac off and started roadworks on Highway Encounter!

It's a well known fact that practice makes perfect — and I don't want any sarky comments about why it didn't work for me! Costa Panayi, the programmer of *Highway Encounter*, has certainly been practising since he wrote *Android 1* and he's realised the advantages of a modular structured program. Now, I know I keep going on about structured programming but it really is worthwhile sitting down and thinking things through properly before you start writing. Just imagine writing something like *Alien 8* or *Highway Encounter* using the Basic hack and try technique. It would more than likely need about half a meg of ROM to run — that's if you ever got it going — and you might just finish it before the turn of the century!

Highway Encounter also uses another technique that's becoming increasingly popular — the tabular approach to data storage. Here, there are more tables than in your local MacDonalds — the object tables and the Vorton tables both use a similar format so that the same routines can be used to handle both. These tables only take up about 4K but they contain 260 objects along the road as well as the five Vortons.

The graphics are handled using the now customary 'stick 'em in a buffer and then copy 'em to the screen' method. That does away with the problems of replacing the bits of screen that have been overwritten. Costa has, shock horror, actually used a more efficient method than Ultimate's — instead of rewriting the whole screen every frame, he keeps a separate buffer that flags the character squares that have been changed, and only updates those. That's how he gets the game to run so fast — though the number of calculations involved means that very full screens tend to slow down.

The 3D effect is generated in the usual way, by printing from back to front so that the closer objects hide the ones behind them. To see how this works, take a look at the very flash title screen. This builds up the name of the game on screen using a series of sprite frames — it's actually the reverse of the 'destruct' sequence for a block.

Highway Encounter avoids all problems with attributes by using the popular method of having only two colours for the moving parts of the screen. But there is a problem with this — in order to produce realistic images, the graphics designer is forced to leave 'holes' in his sprites. OK, so this also happens when normal colours are used but it's usually sorted out by careful palette selection. So, what's the big deal? Well, if a sprite with a hole (no mint jokes, please) passes over a solid background, it'll appear to be transparent and the background will show through.

Let me fill you in on how the problem's solved. Extra info is included with the sprite data that takes the form of a mask and that's where the term 'bit masked' sprites comes from. This tells the routine that puts the sprite on screen which parts of the screen need to be wiped out. That old fave, Boolean logic is used and the whole operation is done using a couple of extra instructions for each byte of data. First, the background is ANDed with the mask — there's a bit set for each pixel that's to be left on — and then ORed with the actual sprite data before being reloaded into the screen or buffer. By the way, these are real ANDs and ORs not the ones used in Basic. It's usual to leave a one pixel border round the sprite so that it stands out clearly. The disadvantage is that you need a mask for every sprite frame so the amount of data is doubled. But as you can see from *Highway Encounter*, the results are well worth it. If you want to find out more about masks, have a look at Chris Wood's article in this issue.

And now you're wondering why there are no POKEs for *Highway Encounter*. Well, Vortex has told us that they intend to remaster the game every thousand copies and change some of the data. That means that any POKEs we print now are bound not to work for the version you've just bought. But keep your eyes on Hacking Away — someone's bound to send in different sets of POKEs for you to try out on your copy.

SECOND OPINION

So, you used to be indecisive, but now you're not so sure, eh? Fortunately, Chris Somerville has come to your rescue with a program that'll help you reach some more definite conclusions.

Has anyone seen an executive toy on the market called a Decision Maker? It's battery operated and delivers, at the press of the button, helpful advice in the form of a randomly generated Yes, No or Maybe. Without any help from it at all, I came to my own decision not to buy one.

Mind you, I still reckon that a computer can be really useful in helping in the process of decision-making. That's why I've written a program that'll help you arrive at a logical decision in any situation where multiple choices are involved and where there are many factors to be taken into consideration. What's the next piece of software that you're going to buy, where are you going on holiday and should it be the Porsche or the Roller this year? It's just so hard to choose — until now!

HOORAY FOR ARRAYS

The first task is to set up two string arrays to hold the possible Choices and the Factors that'll affect them. And as we can't appreciate just how many they'll be in any given problem, it's fortunate that on the Speccy we can DIMension the arrays from within the program, changing their size as needs be. That means that although line 160 sets up two temporary arrays of ten elements, they can grow as large as you require. It works like this — the various Choices are lodged in duplicate, A$(1) = B$(1) and so on, and a count is kept as you enter each Choice. If the count reaches the limit of the array, then one array can be re-DIMensioned to accommodate additional information, while all the info you've already entered is safely held in the duplicate array.

Eventually, the Choices finish up in a correctly DIMensioned C$() and then A$() and B$() are re-used to collect the Factors which end up in F$(). And don't worry about muddling up your Factors and your Choices as you'll be prompted throughout the program.

Of course, there's one decision this program can't make for you — whether or not to type it in. You're just going to have to make your own mind up on that one. But I reckon if you're hesitating, then you're just the type of person who needs this very program. Then again, you could always save yourself the hassle and buy this month's Digi'T'ape. Oh, decisions, decisions!



Don't delay the decision — type the listing in now! It's never too late to call in a second opinion!

```
  10 CLS : PRINT AT 10,0;"
PLEASE WAIT A MOMENT"
  20 RESTORE
```

Lines 10-30 These lines ask you to wait a second while the set-up is taking place and then create a formula to make sure input is in upper case.

```
  30 DEF FN S$(X$)=CHR$ (CODE X$
-32*(X$>="a")): REM
 Ensures Upper Case Entry of INK
EY$
  40 REM DATA for Display Headin
g
  50 DATA 128,139,131,133,131,13
0,137,134,132,131,136,142,133,13
3,131,136,128
  60 DATA 137,134,133,131,136,13
8,142,133,133,132,131,136,142,13
3,128,128
  70 DATA 129,136,133,140,128,13
8,128,133,128,138,138,135,133,12
8,138,128
  80 DATA 138,133,133,140,130,13
8,138,135,133,133,128,138,138,13
5,128,128
  90 DATA 140,141,133,140,136,13
4,137,129,140,130,138,133,133,14
0,130,128
 100 DATA 134,137,133,128,128,13
8,138,133,133,129,140,130,138,13
3,128
```

Lines 40-100 These lines contain the data for the display heading.

```
 110 REM read DATA to create Q$
 120 LET R$="": FOR I=1 TO 32: L
ET R$=R$+CHR$ 131: NEXT I
 130 LET Q$="
                ": FOR I=1 TO 96: R
EAD N: LET Q$=Q$+CHR$ N: NEXT I:
 LET Q$=Q$+"
                "
 140 GO TO 260
```

Lines 110-140 This section of the program reads in the data from the previous lines to create the string Q$.

```
 150 REM Set up temporary arrays
 since size of required arrays
              unknown.
 160 LET A=10: DIM A$(A,29): DIM
 B$(A,29)
 170 FOR I=1 TO A: GO TO 190
 180 FOR I=A-9 TO A
 190 INPUT AT 20,0;AT 10,0;(D$);
(I);(" and Press "; INK 7; PAPER
 2;"ENTER")'( INK 0;CHR$ 143;CHR
$ 143);I$
 200 IF I$="" THEN  GO TO 190
 210 IF I$="stop" OR I$="STOP" T
HEN  LET NUMBER=I-1: GO TO 250
 220 LET A$(I)=I$
 230 IF I=A THEN  FOR J=1 TO A:
LET B$(J)=A$(J): NEXT J: LET A=A
+10: DIM A$(A,29): FOR J=1 TO A-
10: LET A$(J)=B$(J): NEXT J: DIM
 B$(A,29): GO TO 180
 240 BEEP .1,20: NEXT I
 250 RETURN
```

Lines 150-250 Subroutine which sets up the temporary arrays prior to the full size of data file being known.

```
 260 BORDER 7: PAPER 7: INK 9: C
LS
 270 PRINT  PAPER 4; INK 3;Q$
 280 PRINT AT 6,0;"  Your DECISI
ON will be one of       several p
ossibilities or               C
HOICES                 "
 290 PRINT AT 11,1; PAPER 6; INK
 9;" TYPE EACH CHOICE BRIEFLY, U
SE";AT 12,1;"  UP TO A SINGLE LI
NE OF TEXT.": PRINT '"     THEN P
RESS THE "; PAPER 2;"ENTER";: PR
INT " KEY"
 300 PRINT AT 19,0;" WHEN YOU HA
VE ENTERED ALL THE         CHOICE
S, TYPE ""STOP"""
 310 PRINT ,1;"    PRESS ANY LETT
ER TO START": PAUSE 0
 320 LET D$="TYPE CHOICE No.": G
O SUB 160: REM To create array o
f choices.
```

This program is available on Digi'T'ape

```
 330 LET CHOICENO=NUMBER: DIM C$
(NUMBER,29): FOR J=1 TO NUMBER:
LET C$(J)=A$(J): NEXT J
 340 LET D$="TYPE FACTOR No.": P
APER 6: BORDER 6: CLS : PRINT  P
APER 7; INK 2;Q$
 350 PRINT AT 6,0;" Your DECISIO
N will be governed    by one of
several FACTORS       which have
to be taken into            cons
ideration."
 360 PRINT AT 11,1; PAPER 4; INK
 7;" TYPE EACH FACTOR BRIEFLY, U
SE";AT 12,1;" UP TO A SINGLE LIN
E OF TEXT. ": PRINT '"    THEN P
RESS THE "; PAPER 2;"ENTER";: PR
INT " KEY"
 370 PRINT AT 19,0;" WHEN YOU HA
VE ENTERED ALL THE         FACTORS
, TYPE ""STOP"""
 380 PRINT #1;"   PRESS ANY LETT
ER TO START": PAUSE 0
 390 GO SUB 160: REM To create A
rray of Factors
 400 LET FACTORNO=NUMBER: DIM F$
(NUMBER,29): FOR J=1 TO NUMBER:
LET F$(J)=A$(J): NEXT J
 410 CLS
 420 PRINT  INVERSE 1;Q$
 430 PRINT AT 5,0;"   SOME FACTO
RS MAY BE MORE          IMPORTAN
T THAN OTHERS": PRINT '"    PRES
S THE NUMBER OF THE        FACTOR
 YOU CONSIDER THE MORE
IMPORTANT OF:-": DIM F(FACTORNO)
 440 PRINT AT 19,0;" PRESS "; PA
PER 1; INK 7;"SPACE"; PAPER 8; I
NK 8;" IF YOU CONSIDER       THEM
 OF EQUAL IMPORTANCE"
```

Lines 260-440 This routine prints the instructions for the program.

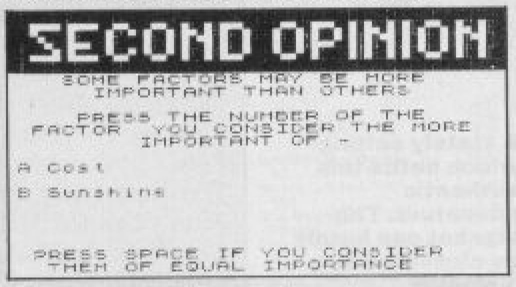
```
 450 REM Assign strengths to fac
tors, compare each with each
                          other.
 460 FOR I=1 TO FACTORNO: LET F(
I)=1: NEXT I
 470 FOR I=1 TO FACTORNO
 480 FOR J=1 TO FACTORNO: IF J<=
I THEN  NEXT J
 490 IF I>FACTORNO THEN GO TO 6
10
 500 IF J>FACTORNO THEN  NEXT I
 510 IF I>=FACTORNO AND J>=I THE
N  GO TO 610
 520 LET M$=CHR$ (I+64): LET N$=
CHR$ (J+64): REM Use Alphabetic
rather than Numeric characters f
or INKEY$ Input since I or J
could exceed 9 and thus be two d
igits.
 530 PRINT AT 12,0; BRIGHT 1;M$;
 BRIGHT 0; PAPER 2;" ";F$(I): PR
INT : PRINT  BRIGHT 1;N$; BRIGHT
 0; PAPER 4;" ";F$(J)
 540 IF INKEY$<>"" THEN  GO TO 5
40
 550 LET I$=INKEY$: IF I$="" THE
N  GO TO 550
 560 IF I$=CHR$ 32 THEN  GO TO 6
00
 570 LET I$=FN S$(I$): REM Ensur
e in Upper Case
 580 IF CODE I$<>64+J AND CODE I
$<>64+I THEN  GO TO 550
 590 LET X=CODE I$-64: LET F(X)=
F(X)+1
 600 BEEP .1,50: NEXT J: NEXT I
 610 LET N=FACTORNO
 620 FOR J=1 TO N-1: FOR K=1 TO
N-J
 630 IF F(K)<F(K+1) THEN  LET T=
F(K): LET T$=F$(K): LET F(K)=F(K
+1): LET F$(K)=F$(K+1): LET F(K+
1)=T: LET F$(K+1)=T$
 640 NEXT K: NEXT J
```

Lines 450-640 This assigns the strength of each factor and then compares within each other to see which comes out on top. Notice that alphabetic characters have been used rather than numeric so the choices can exceed ten within the limits of INKEYS.

```
 650 CLS
 660 PRINT  INVERSE 1;Q$
 670 PRINT AT 5,0;"     IF THE ON
LY FACTOR UNDER          CONSIDE
```

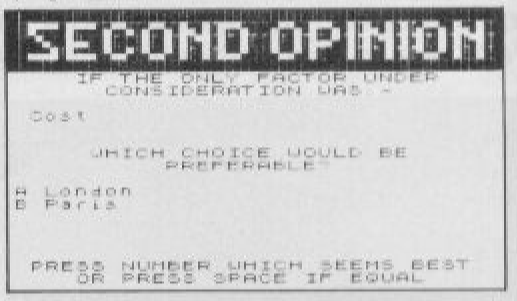
DECISION TIME

Pretty obviously, the computer can't really make your mind up for you. What it can do is help you to organise your thoughts by forcing you to follow a certain logical procedure. And it does this by breaking down a large complex analysis into a series of simple decisions.



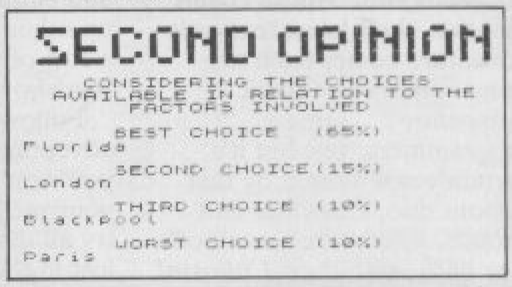
As you can see here, you're only ever presented with the Factors involved in a decision, in pairs. You're then asked to indicate their relative importance. Since each Factor is sequentially compared with every other Factor a numerical strength can be allocated to each. This is where the computer scores over the usual muddled, fuddled human activity that masquerades as thinking. A good example of this is those classic compos you'll have seen in *YS*, for instance. You know, the ones where you have to list in order of importance all the attributes of a particular product. You usually end up like a mental contortionist as you compare each attribute with the whole list.

Now say the attributes were all entered as Factors in this program, well then you'd only have to compare each one with one other and make a decision as to its relative importance. The end result would be a list automatically in logical order of importance and most important of all it would still be firmly based on human judgement.



Once you've covered the Factors, it's just a question of selecting the better Choice of two when only one Factor is involved.

Each separate preference is recorded, scored and modified by the strength, which you've previously established, of the Factor involved. Then finally, the Choices are sorted using the Choice score number array C(). The end result is displayed in the form of the three best Choices, and the worst, with the scores given as a percentage.



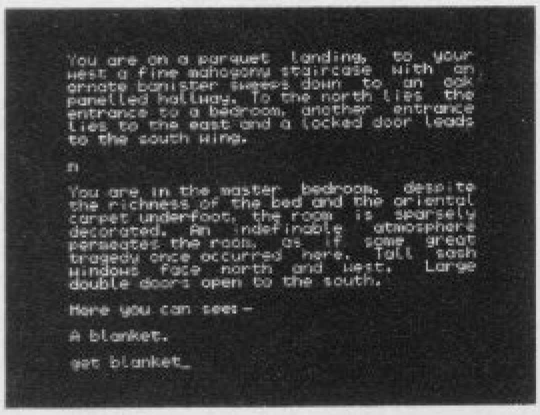

```
RATION WAS:-"
 680 PRINT AT 11,0;"      WHICH C
HOICE WOULD BE                PR
EFERABLE?"
 690 PRINT AT 20,0;" PRESS NUMBE
R WHICH SEEMS BEST      OR PRESS
 "; PAPER 1; INK 7;"SPACE"; PAPE
R 8; INK 8;" IF EQUAL"
 700 REM Consider each Choice in
 relation to a single Factor.
 710 DIM C(CHOICENO): FOR I=1 TO
CHOICENO: LET C(I)=1: NEXT I
 720 FOR I=1 TO FACTORNO
 730 PRINT AT 8,1;F$(I)
 740 IF I>1 THEN  FOR K=1 TO 10:
PRINT AT 9,0; OVER 1;R$: BEEP .
1,10+K: NEXT K
 750 FOR J=1 TO CHOICENO
 760 LET M$=CHR$ (64+J): REM Alp
habetic, not numeric
 770 IF J=CHOICENO THEN  PRINT A
T 14,0; BRIGHT 1;M$; BRIGHT 0;"
";C$(J)' BRIGHT 1;"A"; BRIGHT 0;
" ";C$(1): GO TO 790
 780 PRINT AT 14,0; BRIGHT 1;M$;
 BRIGHT 0;" ";C$(J)' BRIGHT 1;CH
R$ (J+65); BRIGHT 0;" ";C$(J+1)
 790 IF INKEY$<>"" THEN  GO TO 7
90
 800 LET I$=INKEY$: IF I$="" THE
N  GO TO 800
 810 IF I$=CHR$ 32 THEN  GO TO 8
60
 820 LET I$=FN S$(I$): REM Ensur
e in Upper Case
 830 IF J=CHOICENO THEN  IF CODE
 I$<>64+J AND I$<>"A" THEN  GO T
O 800
 840 IF J<>CHOICENO THEN  IF COD
E I$<>64+J AND CODE I$<>65+J THE
N  GO TO 800
 850 LET X=CODE I$-64: LET C(X)=
C(X)+(1*F(I))
 860 BEEP .1,30: BEEP .1,10: NEX
T J
 870 NEXT I
 880 CLS : PRINT Q$: LET N=CHOIC
ENO
```

Lines 650-880 This routine asks you to type in your preferences to certain factors — from this a decision can be calculated.

```
 890 REM Total Numeric array rel
ative to Choice array.     Sort
numerically and then convert to
approximate percentage ratings.
 900 FOR J=1 TO N-1: FOR K=1 TO
N-J
 910 IF C(K)<C(K+1) THEN  LET T=
F(K): LET T$=C$(K): LET C(K)=C(K
+1): LET C$(K)=C$(K+1): LET C(K+
1)=T: LET C$(K+1)=T$
 920 NEXT K: NEXT J
 930 LET TOT=0: FOR I=1 TO CHOIC
ENO: LET TOT=TOT+C(I): NEXT I
 940 LET ADJ=100/TOT
 950 FOR I=1 TO CHOICENO: LET C(
I)=C(I)*ADJ: LET C(I)=INT (C(I)+
.5): NEXT I
 960 PRINT AT 5,0;"     CONSIDERI
NG THE CHOICES        AVAILABLE I
N RELATION TO THE          FACTOR
S INVOLVED"
 970 PRINT
 980 PRINT "        BEST CHOICE";"
 (";C(1);"%)": PRINT  BRIGHT 1;
C$(1)
 990 PRINT '"        SECOND CHOICE
";"(";C(2);"%)": PRINT C$(2)
1000 IF CHOICENO>3 THEN  PRINT '
"       THIRD CHOICE (";C(3);"%)"
: PRINT C$(3)
1010 IF CHOICENO>3 THEN  PRINT '
"      WORST CHOICE (";C(CHOICEN
O);"%)": PRINT C$(CHOICENO)
1020 PRINT #1; PAPER 3;"  PRESS
ANY LETTER TO CONTINUE   "
1030 IF INKEY$="" THEN  GO TO 10
30
1040 CLS : PRINT Q$: PRINT AT 5,
0;"  FOR ADDITIONAL CONFIRMATION
     IT IS OFTEN HELPFUL TO RE-RU
N       THE PROGRAM WITH THE SAME
        CHOICES AND FACTORS BUT
          WITHOUT DELIBERATELY
        TRYING TO DUPLICATE YOUR
          ORIGINAL RESPONSES."
1050 PRINT AT 15,0;"PRESS ""R""
TO RE-RUN THE PROGRAM"
1060 PRINT "PRESS ""S"" TO STOP"
1070 PRINT AT 21,0;"     1984 C
hris Somerville"
1080 IF INKEY$<>"" THEN  GO TO 1
080
1090 IF INKEY$="" THEN  GO TO 10
90
1100 IF INKEY$="r" OR INKEY$="R"
 THEN  GO TO 260
1110 STOP
```

Lines 890-1110 This is the end of the program where the answers and decisions are all printed up.

Here are two new offerings from the pioneers of the adventure game. Peter Freebrey checks 'em out to see if they're still ahead of the field.



A stately setting which befits this authentic adventure. The blanket can hardly be classified as a 'valuable treasure', but Mordon's a funny chap, he'll probably find a use for it!

MORDON'S QUEST
Melbourne House/£6.95

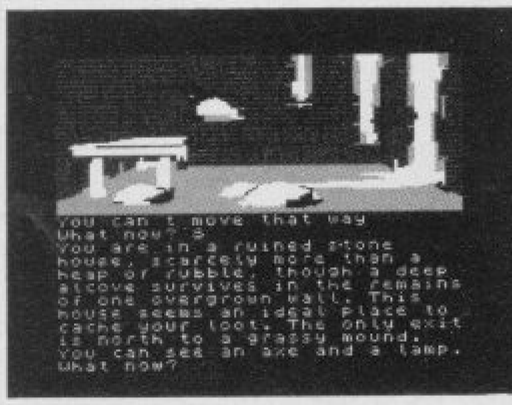
So, Melbourne House claims that this, their latest text-only adventure comes from the same authors as *Classic Adventure* . . . same programmers, yes, but it's certainly not written by that famous duo, Crowther and Woods, who started us all off way back, with their *Collossal Caves* — of which *Classic Adventure*'s a very good copy.

So, following this gripe about the hype, I've got to admit that *Mordon's Quest* ain't all bad and should keep you occupied for many hours.

What's the plot, then? Well, fairly novel really — you've been chosen to save the world by finding and returning a number of strange devices to Mordon. Your quest takes you through many different times and cultures where you'll pick up other valuable treasures — a sort of mythical antiques roadshow!

Follow the usual adventurers guidelines and you won't go far wrong. Map your progress from the start, try all directions and if you get lost in the fog, pop back indoors for a breather.

You'll find that the puzzles are all pretty logical and combined with the large number of locations and vocabulary, you won't get that 'I've wasted my money' feeling. Oh, and one last tip — remember that the sword is sometimes mightier than the pen!



You can stash the cash safely in this run down, ruined shack, but don't hang around shivering, there's a whole world of Magik to be discovered out there...

RED MOON
Level 9/£6.95

How *do* they do it? It seems that every game Level 9 brings out is better than the last. This is their third truly graphical adventure and it's easily the most brilliant yet. There are, hold your breath, over 200 piccies and although you can turn them off if you want to race through at top speed, it hardly makes a difference with this game. You can even type in your next instruction while the pictures are being drawn.

Your aim in the game is to track down and take back the *Red Moon* Crystal. The text is as descriptive as ever and there's the usual sprinkling of Level 9's wacky humour.

As you may have gathered, I reckon this is a pretty magic game but it also has the added attraction of real Magik. So, in addition to the usual commands, there are a number in the format, CAST XXXX. Now, you can teleport, locate objects, look into nearby rooms and so on.

This game will occupy adventurers with a wide range of skills — the beginner will have plenty to explore without becoming too frustrated, while hardened head-bangers will find plenty to frustrate them!

If I were to rate *Red Moon* on a scale of one to a hundred this would be up there in the nineties. Go on, treat your friends to a quiet week or two!

Is this a record? **John Wilson** of Rochdale has sent in so many clues that we've now repapered the walls of Castle Rathbone with his reams and reams of printer paper. And there, just above the nasty stain on Troubleshootin' Pete's desk, oops that *is* Troubleshootin' Pete, are John's tips for *Witch's Cauldron*. So, fasten your broomstick belts and prepare for a quick spin if you're having trouble changing from ape to man.

On top of the cupboard is a jar with a key inside that opens the south door. In the hall of Mirrors lies a large key that'll let you leave the hall if you go S-E-E-S-W-W-S-E-N-W-N-E-N OPEN EAST DOOR. To make the change you'll need the ten pence piece, a lock of lion's hair, the red bow and the gold coins. Now lay your hands on a wand by taking the magic dust from the chest at the top of the laundry stairs and then it's off to the wall of flame in the cellars where you must THROW MAGIC DUST OVER FLAMES. Then nab the pencil. Now beetle back to the cauldron (go out of the window and along a ledge) and WAVE. Find your way to the beach and say the password — COVEN. Success at last! Perhaps this'll be of some help to **Bob Calliton** of Brentwood — he's been stuck on it for the last five months!

Mind you, if the game's still making a monkey out of you — just get in touch with John. And his talents extend way beyond the one game. As he says rather modestly in his letter (this bit's just to the left of the Ed's ear), "Compared to me, the rest are mere amateurs!" Perhaps he'll help paper your walls too!

Another John, **John Rundle** of Aldershot has been almost as busy. But first a bit of biology — how do you stop a gremlin from reproducing? The answer is keep him away from water, so make sure you drain the swimming pool. Well, would you want to go swimming after a gremlin had been in there? If you're having trouble locating the Gizmo in *Gremlins*, he's in the chute — and you can open that by using the remote control twice, then twice again and once more for luck.

Now, **James Webb** has set sail with *Erik the Viking* from his home in Co. Tipperary. *(Mmmm, that's a long way to go! Ed)*. But he warns fellow Norsemen to find the needle in the haystack pretty smartish or your sails'll rip and your days of pillage and plunger will be over.

That's it for another month. But don't forget to send in your hints, or pleas for help to Give Us A Clue, *Your Spectrum*, 14 Rathbone Place, London W1P 1DE. And if there isn't room on the page for your name and address, don't despair. You can keep on trying or better still, get in touch with someone who can offer help on the game that's currently causing you nightmares. Just think of all those *YS* readers dying to hear from you — but do try to send them an sae or they may not be able to reply.

KINGS OF THE CASTLE

Tir-Na-Nog, Ground Zero, Knight's Quest, Se-Kaa of Assiah, Witch's Cauldron, Jewels of Babylon, King Arthur's Quest, Wrath of Magra, Heroes of Karn.
John Wilson, 26 Spotland Tops, Cutgate, Rochdale, Lancs. L12 7NX.

The Hobbit, Witch's Cauldron, Valhalla, Hampstead, Gremlins, Forest At The World's End, Colditz, Lords of Midnight.
John Rundle, 26 Western Road, Aldershot, Hants.

Erik the Viking, Ten Little Indians, System 15000, Snowball, Lords of Time.
James Webb, 21 Ballycraggen, Puckane, Co. Tipperary, Ireland.

Hulk, Spiderman. (But still lost in *The Hobbit* and *Twin Kingdom Valley!*)
Graham Thomas, 14 Simpson Street, Stanely, Co. Durham DH9 0PF.

Pyjamarama
Jason Goodall, 334 Parkmill Close, Corringham, Essex. SS17 7JR.

Twin Kingdom Valley
Stewart Robinson, 184 Nuncargate Road, Kirby In Ashfield, Notts NG17 9EA.

Ship of Doom, Invincible Island, In Search Of Angels.
Steve Lodey, 1 Cumberland Close, Felixstowe, Suffolk IP31 9ST.

Emerald Isle. Jack Lockerby, 44 Hyde Place, Aylesham, Canterbury CT3 3AL.

Emerald Isle, Return To Eden, Lords of Time, Dungeon Adventure. Mr. M Kerr, 27 Eddrington Grove, Chapel House Estate, Newcastle, NE5 1JG.

DOWN IN THE DUNGEONS

Witch's Cauldron
Bob Callinton, 15 Wingway, Brentwood, Essex CM14 4XW.

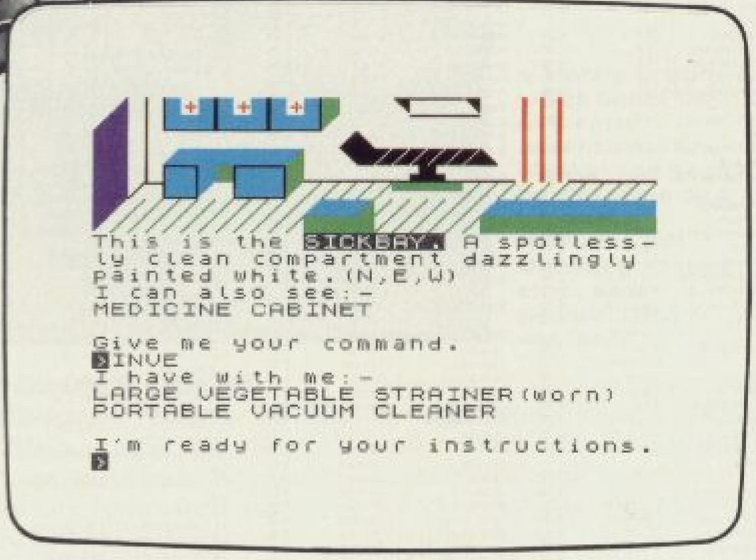
Mugsy — 'How can I get a contract?'
Anders Wihlgaard, Klackvagen 7A, 852 54 Sundsvall, Sweden.

Bored of the Rings — 'How do I get past the Morona Gate?'
June Wilson, 41 Victoria Road, Barrhead, Glasgow G78 1NQ.

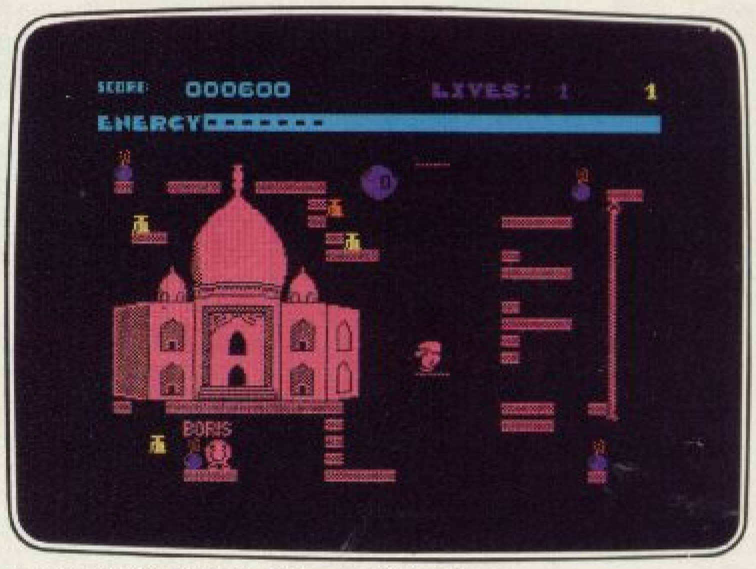
Dun Darach — 'How do I get a job?'
R Brand, 15 Cavendish Meads, Sunninghill, Ascot, Berks SL5 9TB.

Valkyrie 17 — 'Where's the shaving foam?'
Erik Thelander, Bergsgaten 16, 11223 Stockholm, Sweden.

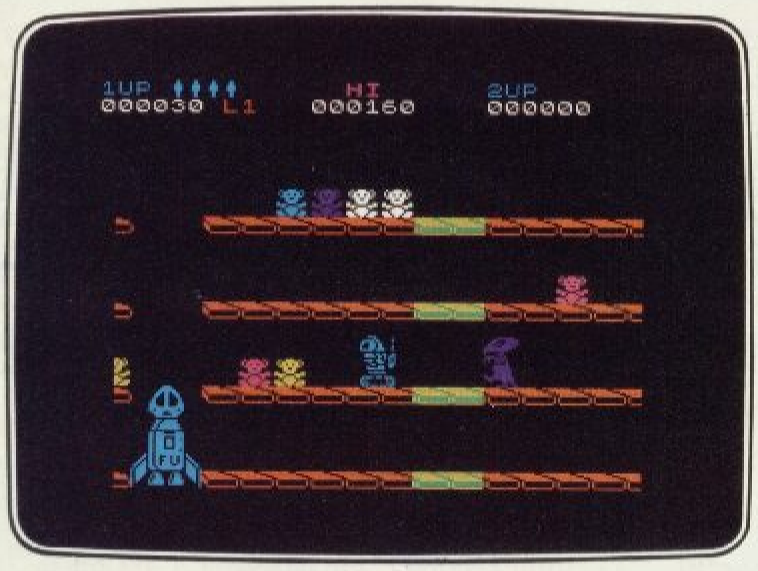
SILVER RANGE. . . Seeing is believing



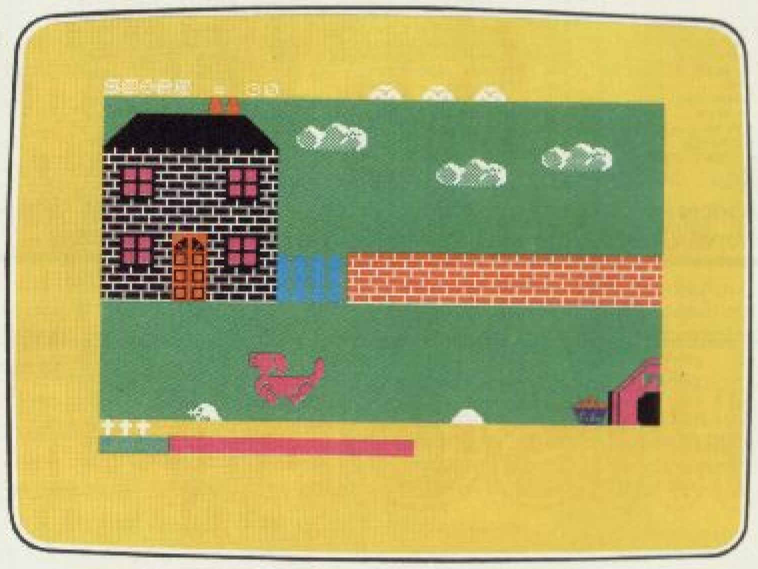
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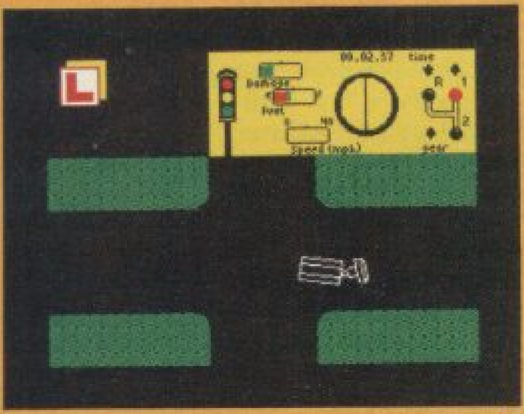
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JOYSTICK JURY

It's all change again this month as we say goodbye to the irrepressible Roger Willis — you haven't heard the last of him though, you can be sure of that — and welcome Dougie Bern in his place. He joins the other two joystick jurors, Rick Robson and Ross Holman as they pass judgement on all the latest games.

It's all change on the scoring system too! Out go the hits and misses and the score out of five. So that the joystick jurors can draw more subtle distinctions between games, they're now giving the scores out of ten. If there's anything else you think they should be telling you, let 'em know!



JUGGERNAUT

CRL/£9.95

Dougie: It must be everyone's dream to drive a massive juggernaut around the streets ... but if this game's anything to go by, there were extremely lucky pedestrians out there the day I made the decision *not* to get behind the wheel.

Once you've had a good drive around in practice mode (the easy bit), you're ready for the real thing. You're trucking for McNab & Sons, a company that deals in coal, oil, fruit and veg, and timber. Random targets are set up for how much of each commodity you've got to go and collect, and you're now ready to head off into the maze of streets; the street map is generated randomly and the pick-up points are different each time.

Handling the two forward and one reverse gears are tricky, and manoeuvring a juggernaut around the roundabout with the steering wheel can be a scream.

Re-fueling and undoing the truck's damage is done at the garages, and you can even 'phone up for help once per game if you can't find a particular commodity. One useful feature is being able to toggle between the street map and the road screens if you get lost ... I mean, have you ever tried to read an A-Z whilst driving a juggernaut at 40mph round a tight corner?

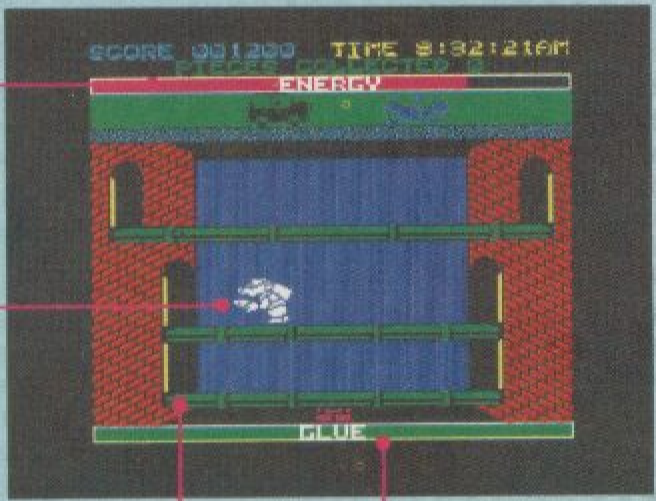
Don't try and look over someone's shoulder to try and find out what the game's like — this is one that you'll have to sit down and play before you find out how absorbing it is. The vector graphics are clever, although sprites might have been nicer. But what the hey, it's a great game. **8/10**

Rick: The GLC only let you play this during the day. Just as well as it takes a while to master this lorry and its load. Top gear if trucking's the name of your game, but I managed to melt several Yorkies before I got the truck rolling 10/4? **5/10**

Ross: It's a bit tricky to master the controls, but once done this is a game to spend a good few hours with. Good smooth graphics and lots of options keep the interest alive. Well recommended. Keep on truckin'! **7/10**



ROSS'S RAVE OF THE MONTH



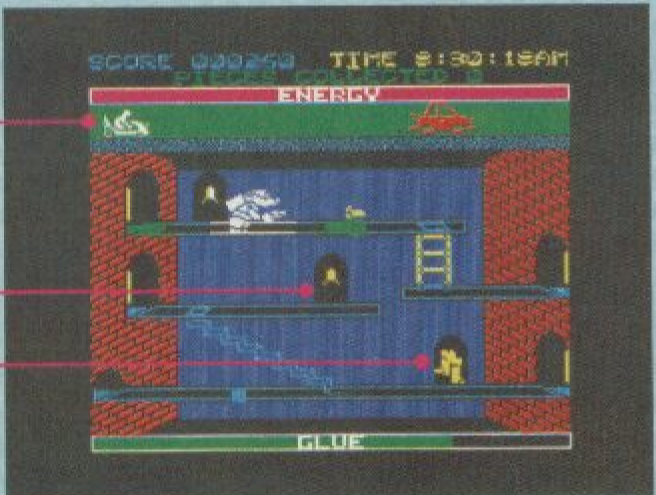
Your energy level can be topped up with the tasty hamburgers and crisps that Roland finds on his underground travels.

This'll have you glued to the set. You're armed with your Stic-o-matic super glue gun — squirt this in the direction of the welly boots before they rubber you up the wrong way!

Down on the second level you'll find an underground train. To hitch a ride, fire a globule of glue onto the track and climb aboard.

Dotted around the underground system you'll find packets of Stic-o-matic super glue to replenish your supplies as they dwindle. Don't use it all at once or you'll find that you'll run out just as you need it.

Along the top of the upper level, you'll get a view of what's going on in the real world — but wait this can't be the real world 'cos that's a C5 — and no-one drives around in those!



If you're looking for an easy way out of a sticky situation, then one of these doors leads across a pipe to another set of rooms. And fortunately, the meanies can't dog your footsteps.

Beware the jet set wellies — they'll sap your energy if you head straight for them. Use the glue to hold 'em fast for a while — go on, stick the boot in!

ROLAND'S RAT RACE

Ocean/£6.90

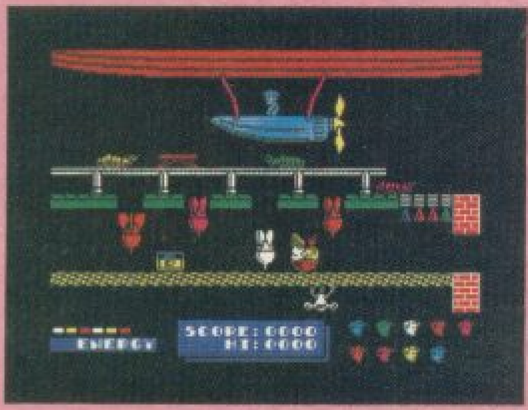
Ross: *Roland Rat* has many fans, but I'm not one of them, so I didn't know what to expect of this rodent's tale. It turns out to be a ladders and levels escapade, mirroring old Ratty's real life efforts to get up at an unratly hour and make it to the TV studios in time for his early morning show. As any true rat should, Roland starts his day down in the sewers, scrambling about to get out.

This is a game for clever rats, that use ladders and assemble keys and other unrat-like activities, but then again Roland has traded in his cage for a TV presenter's chair! His two main worries, are his high metabolic rate which means he gets hungry all the time and the energy gauge drops rapidly. The other major rat-traps are the marauding wellies. Now you know! People may hate rats, but rats hate wellies! Roland can quell his hunger pangs quite nicely with the tit-bits he finds, and he can beat the boots by firing glue pellets to stick the welly to the spot!

By exiting to the left or right of a screen, you can take Roland to new levels and pipework. It's an idea to make him a map though, or he could get quite lost in this rat-race. Once he's escaped, other adventures will befall him. A rat's work is never done... **8/10**

Rick: With so much glue about, this ain't a game to be sniffed at. I didn't know Roland was so stuck up. Still you won't come to a sticky end with this winner from Ocean. No-one could feel ratty playing this! **8/10**

Dougie: I must admit that I like games that you can map ... and this is a classic. In fact, you're going to be in trouble if you don't. For *Roland Rat* fans this is a must. For the rest of you — you're missing out! **8/10**



DYNAMITE DAN

Mirrorsoft/£6.95

Ross: Hallo ... what have we got here then? Looks like a man of that all too familiar *Jet Set Willy* ilk! But hang on! This *Dynamite Dan* chap is decidedly more dynamic than his earlier rivals. Why do I say that when the basic idea is a collecting-objects-from-a-many-roomed-building-clone? Good question, but the mission that *Dynamite Dan* takes on is pretty high on the excitement stakes! You'll find that this is the very cornflour of a Bond-movie-type plot when you get to grips with the story. The courageous *DD* is out to rescue the plans for a deadly weapon stolen by the dastardly, devilish Doctor Blitzen. As Mr Dan himself you have to land your Zeppelin on the castle's rooftop, way up on a cliff. You must then gather together as much dynamite as you can to blow that safe where the plans are, sky-high!

So what else is new in *Dynamite Dan*? This man is a pretty big sprite, and pretty spritely he is too! His movements beat other games literally by leaps and bounds as he boosts his jumping power by springing, Zebedee style on trampolines and bouncy floors!

The screens are bright and colourful and as funny and action-packed as any I've seen. *Dynamite Dan* is a bit of a tricky one that makes you try and try to beat those screens. Not quite explosive, but plenty of fun. **7/10**

Rick: Achtung! Achtung! *Dynamite Dan*, the man you've never heard of is coming to town! Wait till you hear the music on this good-humoured-family frolic, you'll be hooked immediately! **6/10**

Dougie: It seems that Mirrorsoft has taken all the good bits from the classics and bunged them all in together. Great stuff! **8/10**

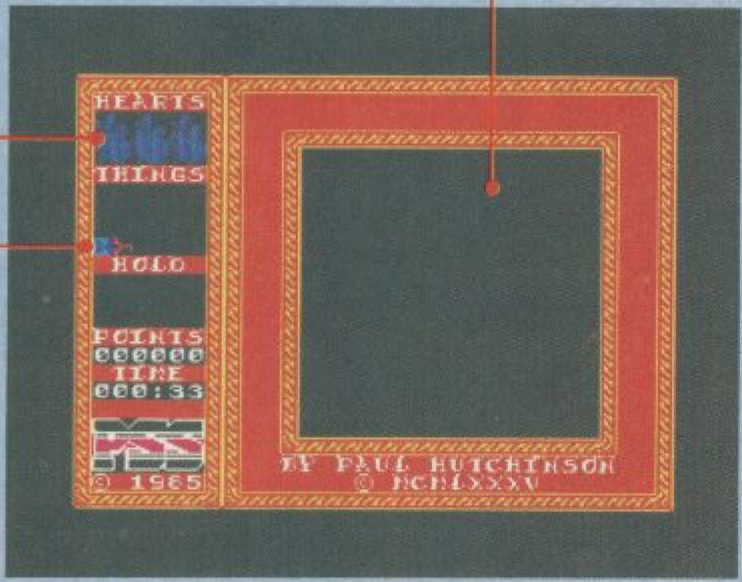


RICK'S RAVE OF THE MONTH

My, haven't we done well. (*No! Ed*) This large area shows just what you've collected so far — and that can be summed up in one word — zilch. You get the picture?

Your lives are illustrated by the three hearts. When they pump purple, you're in good shape but like this, blue, cold and lifeless, it's clear you've had one heart attack too many.

What have we got here — a key! You can use it to open one of the treasure chests where you'll find a piece of the coveted covenent.



The bubble car's making a comeback! You have two choices when it comes to transport — in the pod here or Shank's pony, but you'll have less protection then. The catch is that you can't pick anything up or recharge your energy when you're inside your womb with a view.

Don't let 'em get you in a corner. The meanies move in a crescent shaped patch and you'll have to take avoiding action if you don't want your power drained.

Look for level ground if you want to disembark from your globe or you could be in big trouble at touchdown.

The plants are harmless and just for decoration. The objects you'll find, however, can boost your power cells or provide weapons — or they can do the exact opposite. The motto is, take care!



THE COVENANT

PSS/£6.95

Rick: One for all you raiders of the lost Arcade. An adventure with a platform element, this game combines something of a *Dr. Who* scenario with an intergalactic *Roots* saga. A game most certainly for the skilful, not the wilful, as just one false blast (well only a few anyway) on your retro will doom your ancestral race, to oblivion. As a cosmic culture-vulture your mission impossible is to retrieve the 64 pieces of your people's covenant. You won't find 'Darwin was here' scratched on any of the multitudinous caverns in this game, as it's actually the groovy ghoulies who threaten your existence. They're miraculously transmuted into your own descendants once you've captured them all — it's a wonderful thing evolution.

But what am I doing, I can't go on telling you the plot! Let me tell you about the revival of the bubble car instead. You must manoeuvre your spherical craft, in a roundabout way through rocky caverns and around ledges. Don't worry about bursting the bubble, you can quite safely smash it into walls. But be warned, it's no smooth ride in your floating globe. You'll need a pretty nifty touch to control the craft as the friction factor's high, so don't expect to slip around gracefully like the ball in a Steve Davis trick shot. And don't waste energy searching for a recharging spot either.

If you've got *Superman*-type-saviour-of-the-world instincts, then you should have plenty of fun with *The Covenant*, and it really does put the joy back into joystick! **8/10**

Ross: I know software can be adventurous, but the thought of being the last bastion of a whole threatened race is hard to get used to! Luckily, controlling the vehicle and avoiding grand caverns takes your mind off the seriousness of your task! Watch out *Indiana Jones*, you've got a rival! **6/10**

Dougie: The graphics are fairly average, but the game is well up to scratch. It takes a bit of practice to get really good, and there's no chance of me finding all 64 bits of the covenant ... but that's no problem. Fun, fun, fun. **8/10**

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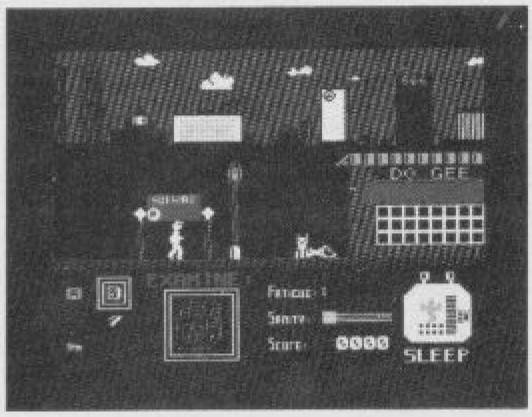
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181 Portland Crescent
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JOYSTICK JURY



THAT'S THE SPIRIT

The Edge/£7.95

Ross: If you see yourself as something of an urban child, then you'll be intrigued to find yourself in this game caught up in the whirl of life in downtown New York. This is a complex text adventure, without the text, a city romp à la *Ghostbusters.*

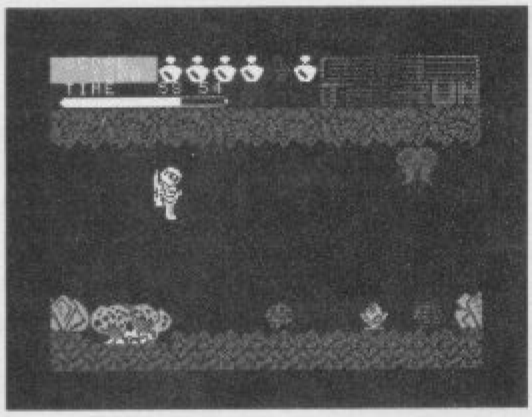
Just as you'd expect in the Big Apple the results of your actions vary according to your location. For example, if your man's background is buildings and distant skyscrapers, you can move him left or right and get him to pick up objects.

So where do the spirit's come in to all this? All over the place. You'll be zapping them with your ghetto-blaster... er I mean ghost-blaster, and watch out for those invisible ghosts too...

You'll be kept in the picture about which objects you have by a small area at the bottom left of the screen. Life in the big city won't get dull with objects such as a lazer-gun, a bone, a computer and a mouse to keep you going! Gauges will keep a check on your fatigue and sanity levels *(Where's my analyst? Ed.)* so that you can get nearer your object. And what's that? To reach Liberty island it seems. Something of an all American dream methinks... **6/10**

Rick: *Hampstead* in piccies for the streetwise kids, and most of the jokes are stale. **5/10**

Dougie: OK ..you dirty rat.. don't mess with the big boys or we'll send the mafioso spirits round to haunt you... James Cagney would've loved to mess around in this game. **6/10**



ON THE RUN

Design Design/£6.90

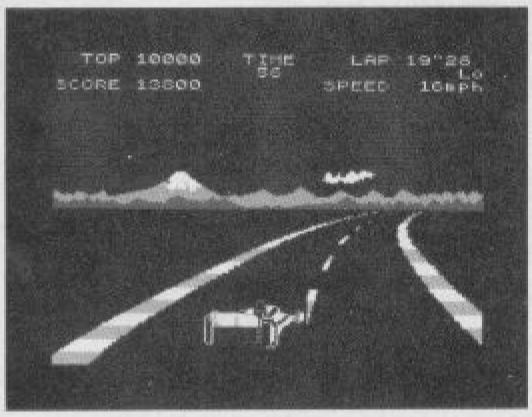
Rick: Flower power is the name of the game in this lazy, mazy arcade adventure. As Ace investigator Rick Swift you have to discover six flasks of dangerous chemicals before they go critical — which takes about an hour. I got critical of this after ten minutes. But then I've got no patience — especially if there's danger involved!

So what exactly are you "on the run" from? Along the way you're plagued by mutations of plant and animal life that sap the power out of your protective suit. It makes a change to be eaten *by* rather than eat a mushroom.

With all the thrills and none of the spills of actually living near Windscale, nice light joystick control and enough freaky fungoid and gnashing teeth to rouse anyone's blood lust, this is a good solid game with few failings but no novel fascination. There's no maze map or pre-view facility so there are plenty of occasions when you'll float unwittingly into a field of ferocious flora and fauna. That's when those smart bombs are so handy. A goodish buy if you've no equivalent. But otherwise don't bother. **6/10**

Ross: This game is quite a departure from the usual offerings. The graphics are quite pretty, but the Jetman doesn't get very animated. It's not in the running for any great accolades. **6/10**

Dougie: Not a game for garden lovers — you'll soon find yourself walking around your backyard hesitantly! The game is competent, but nothing special. Take a good look at it before you decide. **7/10**



POLE POSITION

Datasoft/£7.95

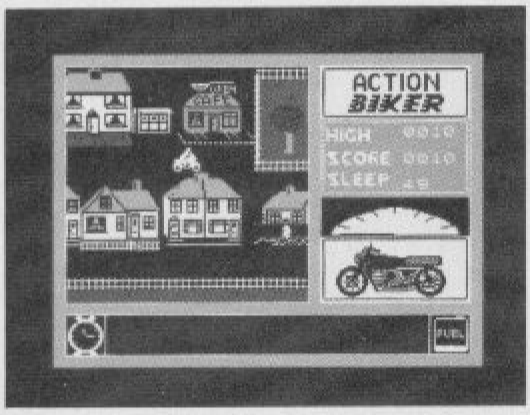
Rick: Stone me, if it's not another (if not the original) grand prix simulation game. As the holder of no less than 9 provisional licences, I lapped up the idea. A golden oldie that pre-dates history lessons and is slightly more raunchy. Arcaders will either groan with the familiarity of it all, or welcome it as an old friend into the swelling cohorts of Spectrum games.

So what d'ya do then? Quite simply whizz your mighty McLaren around the mountain encircled track within the alloted qualifying time. Just feel the horse power throb in the grip of your joystick... the faster you qualify, the higher up the grid you climb. Then for the race proper. Avoid banging your comrades, (in any position, let alone Pole), or pranging the placards as you try to set a new lap record or get a high score.

This game has good, if not world championship graphics. Added to joystick responses this Pole's Position could be first past the flag, compared to say *Chequered Flag.* No matter how many times you burst into flames, your car keeps going. Whatever your position on racing games try the Pole one. **8/10**

Ross: Hang on a minute, it may be 1 o'clock in the morning but I can still spot that this is a re-release of Atarisoft's *Pole Position.* The roadside signs may've been changed, but the game's the same. Might be cheaper to find the old version. **7/10**

Dougie: I must admit that the first time I saw this game was on the Commie 64, but the Spectrum version is just as good, and addictive too. Lots of action here, and it's fast ...! **8/10**



ACTION BIKER-CLUMSY COLIN

Mastertronic/£1.99

Dougie: Action Bike sports three (count 'em) loading screens, one of which is an uninspired advert for a packet of brandname 'crispy corn fries'. So, having been brainwashed into lashing out on a packet of said fries, I sat down to see if the game was as good.

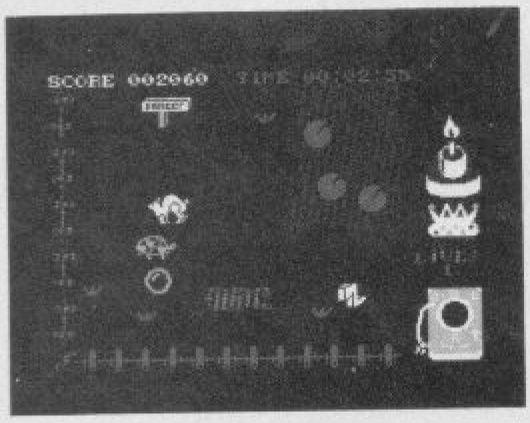
Clumsy Colin, our hero on a bike, has to seek out his mate Marti in one of 150 houses on a very colourful housing estate. A feeble on-screen speedometer registers how fast you drive around the lanes, but what with oil all over the road, other vehicles smashing into you, and tight corners everytime you look up, there's no chance of reaching high speeds.

Searching a house, which is depicted in a psuedo-3D plan view, is pretty fruitless — but you do occasionally come across some 'go-faster' accessory for Clumsy Colin's bike, such as some headlamps or special wheels.

On-screen graphics are pretty jerky, and the scrolling leaves a lot to be desired. Not one that I could recommend. **3/10**

Ross: OK, so it's cheap but that doesn't have to mean nasty *all* the time. It'll keep you occupied as long as it takes to eat a bag of crisps. **2/10**

Rick: So, this is what our very own action biker, Willis is up to now he's left Joystick Jury! But no, he would've picked a game with more class. **3/10**



TALOS
Silversoft/£7.95

Dougie: The usual old twaddle of a storyline — but the game's not bad if you're into Ultimate-type clones.

The story goes like this ... the Crown of Destiny *(You know the one. Ed.)* has been stolen and locked up in an impenetrable vault (and if this game tells you it's impenetrable, you'd better believe it!). Of course, the only way to get the crown back is to call in the help of Talos, the invincible robot. Trouble is, all that's left of the old boy is his hand — so the hand sets off to find the rest of its body ... and no dirty laughs, we're talking 'arms', 'legs' and a 'torso' here.

There are loads of locations — definitely one to map!

As far the action, the hand must first find its arm, then the torso, and then the rest of the bits and pieces. Once the hand's become a full-blown arm, it does present a larger target for all the murderous creatures, such as grasshoppers, sheep, birds and tortoises, that explode out of the ether in true Ultimate-style.

Apart from the occasional signpost pointing the way, there's very little on-screen to get your bearings from.

A candle burns away in the corner of the screen, waxing and waning with your fortune; however, until you've had a lot of practice, be prepared to snuff it.

All in all, very much like an Ultimate game — but then using one terrific game as a model for another never did *JSW* any harm. I, for one, would be prepared to give a big hand to *Talos.* **8/10**

Ross: You've got to hand it to them — this may remind you of *Sabre Wulf* but it's still up there in the addictiveness stakes. **7/10**

Rick: You won't catch me forking out an arm and a leg for this one, but it's still worth casting an eye over if just for the neat graphics. **5/10**



ABU SIMBEL PROFANATION
Gremlin Graphics/£7.95

Ross: If you're looking for exotic moments of Eastern promise, then get back to your Turkish Delight. *Abu Simbel Profanation* may be set in Egypt, but it's about as full of oriental mystique as a Chinese take-away. The graphic backdrops make decent scenery but unfortunately, there's nothing too theatrical about the action.

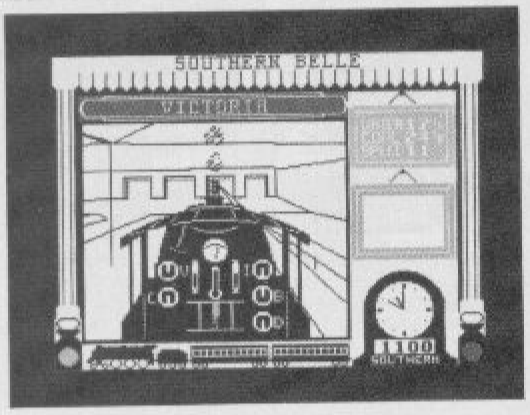
Forget the idea of majestic looking Egyptian Pharaohs, the man whose strings you have to pull is more of a blob on legs. His movements are jerky rather than heroic, and he escapes the collision detection pretty successfully at times.

Timing your jumps in the first screen is enough to try the patience of a mummy. Also, immortality in this game is a little mundane. When you lose one of your many lives, you reappear at the point where you entered the room. This is no joke as often you've spent a while trying to defeat one obstacle, only to be killed by another further into the room.

It's all pretty mediocre stuff, and I doubt Cleopatra would be charmed if she played it. **4/10**

Rick: You can tell why Gremlin calls this *Profanation* — I'd be swearing if I was permanently stuck in this Egyptian hokum. **4/10**

Dougie: Everything seemed against me, including the jerky graphics. I liked the idea of the game... but the reality never quite came up to the expectations. **3/10**



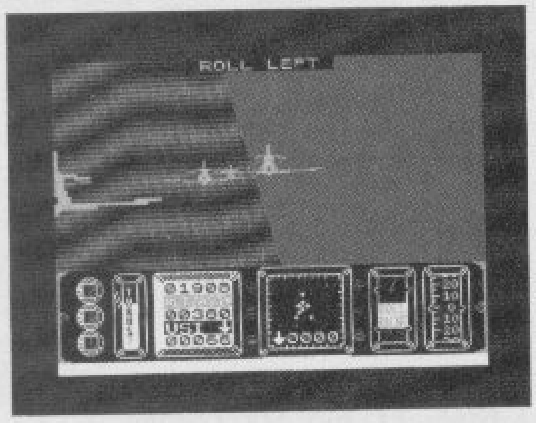
SOUTHERN BELLE
Hewson Consultants/£5.95

Rick: "Live out your dreams on the *Southern Belle*" *(Who she? Ed.)* But it's not really a dreamworld. This cunning cassette has nothing to do with sultry Southern women though Dad's more likely to get steamed up over this than he did over your train set! But nostalgia ain't what it used to be as the age of steam meets the age of the microchip.

The game faithfully re-enacts the *Southern Belle*'s hour long journey from London Victoria to Brighton. The brain takes the strain and the computer plays commuter as you try to keep to schedule without letting the coal or water run down. But it's all a little too predictable. And why not choose a more thrilling run like that of the Mallard if you want speedy excitement? Pre-Beeching in its evocation of steam romance — pre-historic in its chug-along concept. Give me the 125 any day. **6/10**

Ross: The wide range of control options offered in this game made it possible for me to get the train in motion without even using the instructions! But once I was merrily chuff, chuffing down the track, I wished I wasn't there. **4/10**

Dougie: Well, it's a welcome change from space games, but it doesn't quite make the grade to become a classic. What it lacks is some excitement. **5/10**



RED ARROWS
Database Software/£8.95

Dougie: Looking through the 24-page manual for this simulation isn't an inspiring task — the words tell you all about the *Red Arrows*' celebrated career, their planes and their successes ... and ... eventually ... on to the game itself. Which is what we're here for!

Once you've digested the relevant 10 pages of playing hints and tips, you can decide to fly in formation or solo. Solo is, of course, flying on your own. Boring. Flying in formation, however, is OK — a bit like *Come Dancing* with jet aircraft.

The control panel is, as always, crammed with every kind of indicator imaginable. Of course, no-one ever looks at these ... but they're there if you want.

The graphics are good and chunky, but pixel graphics might have introduced a more interesting in-flight display.

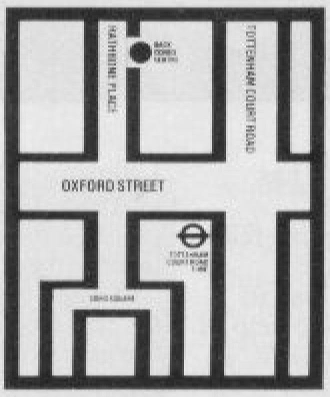
Your role in this simulation is to keep up with the rest of the lads on-screen. And if you fail in your manoeuvres, you end up parachuting down out of your plane...

Oh, one last thing. Aficianados will be interested to hear there's a competition included in the package. This could be your chance to meet up with the real Red Arrows! **7/10**

Rick: As soon as I loaded this one up, I switched from automatic pilot into top speed games-playing mode. I didn't mind lagging behind the other high-flyers — after all, who gets to parachute every day? Swoop down on this one chaps! **6/10**

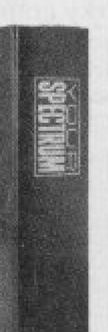
Ross: I think I've had enough of these magnificent games about flying machines, but I admit that there's more to this than plain flying. It's artistic innit, like! **5/10**

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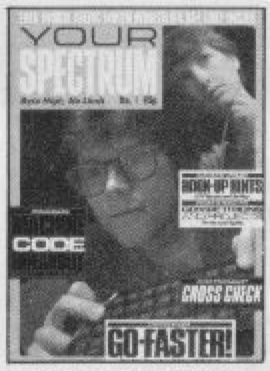


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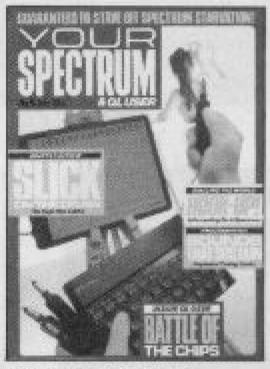
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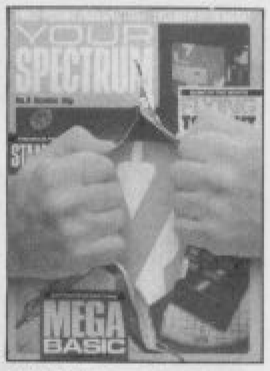
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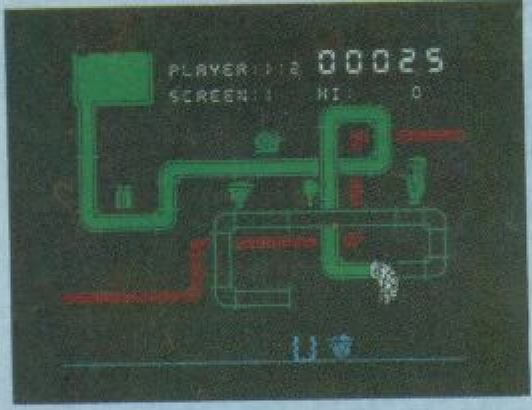
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JOYSTICK JURY



SUPER PIPELINE II

Taskset/£7.95

Dougie: First off, don't be taken in by the screenshots from the Commie 64 version on the inlay card. The Spectrum version's screens are just as interesting, the sprites are just as fast and smooth, but the graphics aren't as pretty and the designer chappy who colours it all in must have had the afternoon off.

But if looks don't matter too much, then this game's a treat. It's a bit of an exercise in uncontrolled mayhem, but it does have a cute story so it can't be that violent!

Foreman Fred heads up a bunch of mindless workmen (who resemble Ewocks in tin hats) whose job it is to make sure that the water continues to flow through the pipeline. And why shouldn't it continue to flow? Ah, didn't I mention the deadly slugs, spanners, showers of tacks, lobsters, power drills and hammers?

The action is fast and furious — you never get too much time to consider tactics, it's just a matter of shooting all the time and patching up the leaks.

Foreman Fred fixes a leak in the pipeline by leading one of the Munchkin workers over to the hole, whereupon the little man seems to do something rather obscene with a hammer. It's soon fixed but, oh no, another leak's started. And that's it really ... apart from the fact that every time you manage to fill a barrel full of water at the end of the pipeline, you're whisked off to another level, a different shaped pipeline, different nasties — and the same ol' mayhem.

Absurdly impossible, foolishly frustrating ... but fun. **7/10**

Rick: Look, I can't hang around here. I've got a leak over there and the nasties are on my back... Pack up the grey matter and plumb the depths! **8/10**

Ross: It's only a couple of months since the original Pipeline appeared under a different company. You'd have to be really dedicated to want both but if it's only one you're after, this is it. **7/10**

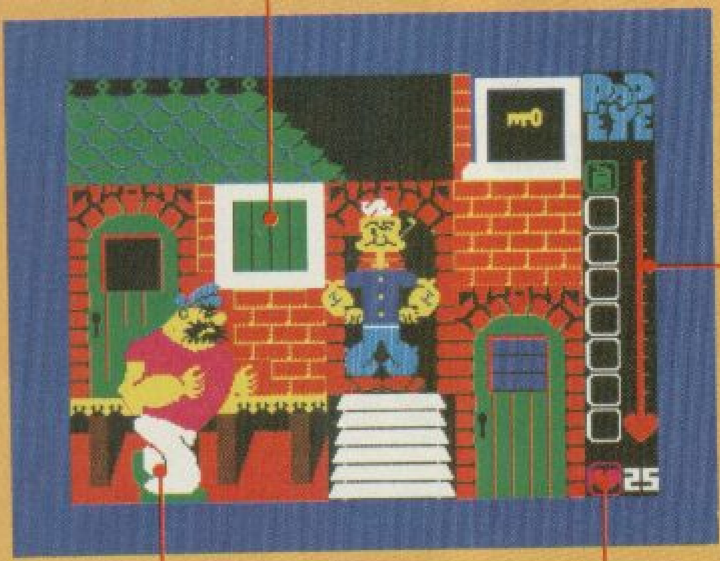
DOUGIE'S RAVE OF THE MONTH

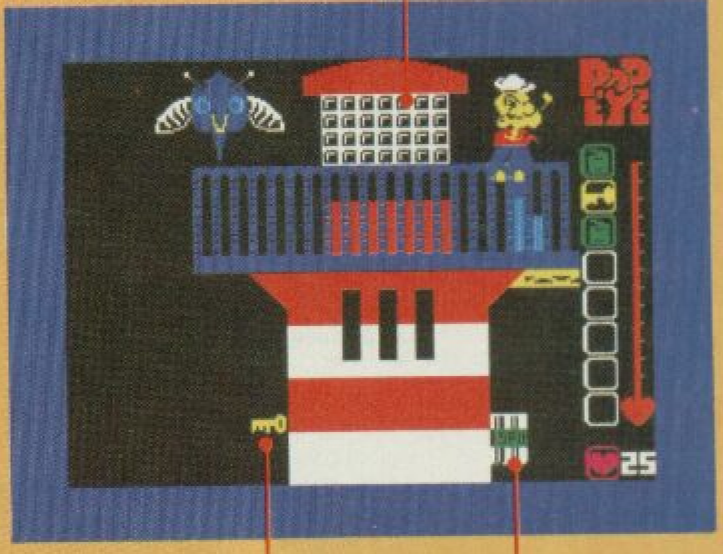


You can find that fickle female, Olive Oyl behind this window — but at least you're assured of a warm welcome when you take her a heart.

She loves you, she loves you not! You can tell whether you're in favour with Olive Oyl from the love meter — if it reaches zilcho, then your heart's broken, Popeye!

To get to the top of the lighthouse, you'll have to start climbing. And once you're up there, it's round and round in circles to avoid the fly. Dizzzzzy!





Here comes trouble — big trouble! The game's played on two planes, front and back, so to avoid a bout of fisticuffs with Bluto step back out of his path.

The course of true love never did run smooth. To keep Olive sweet, you'll just have to collect the hearts you find on your travels. Take them back to her straight away and your love meter will be topped up.

Collect the keys or you won't be able to open the doors — and then you'll miss out on plenty of other locations — not to be missed!

Get your mitts on as much of the green stuff as possible — Spinach, what d'ya think we meant? It's the only known substance that'll revive a confirmed vegetarian like Popeye.

POPEYE

Dk'troniks/£4.95

Dougie: At first sight, this game looks outsized. Everything is BIG! But this trauma soon passes as you come to terms with the idea that not everything has to be four pixels high and, well, who wants to wear glasses anyway.

Everyone's here — Popeye himself, Olive Oil, Bluto, the dragon ... Ah! Well, this is where we veer away from the 'Bluto chases after Popeye's girls, Popeye eats the spinach and punches out Bluto' theme.

This multi-screen adventure has got fire-breathing dragons, wicked witches, bug-eyed monsters and all sorts of other nasties. The idea is to walk Popeye around, jumping up for hearts to take back to Olive, keys and cans of spinach, and keep out of everyone's way. Especially Bluto's. Whenever I went near that particular man-mountain, he thumped me — unfortunately, in the game the cans of spinach are used to revive poor ol' Popeye rather than giving him the strength he needs to return Bluto's compliments.

Once you've got control of the Popeye character, you can walk him all over the place, up and down stairways, shinning up and down ropes ... except when you come up against a locked door. At this point, you've got to retrace your steps and search out one of the keys.

To be honest, I wasn't too impressed at first ... but then I started uncovering all sorts of locations behind the locked doors and a whole new set of nasties. Not being able to see all the locations at the start *does* make the game more interesting.

There seems to be a slight problem with the colours — figures often blend in with the background. But the characters are fun, and their movements are both clever and full of humour. **8/10**

Rick: A hit, oil be bound, and there are plenty of hits and fists in *Popeye*! The world's first ever vegetarian body-builder has been honoured with a game that's pretty to look at, and pretty dull to play. **4/10**

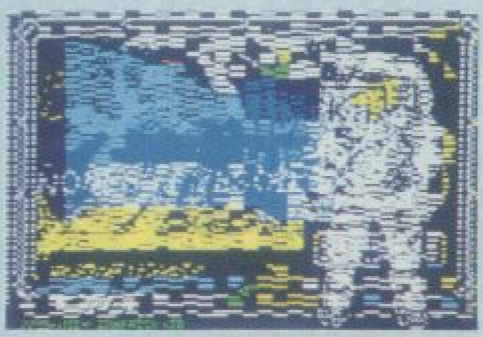
Ross: Going round guzzling the green stuff all to get the goil is a good idea — and the cartoon graphics add to the fun. I'd spend the green stuff (no, not the spinach) on this game! **8/10**

STAR TURNS

Now we've got to admit that these screen shots do lack a certain something — movement mostly! So, you'll just have to take our word for the stunning visual effects that you can conjure up with these routines.



To the left — quick scroll. The new picture scrolls in from the right to replace the old one. It's pantastic!



Swoon as one picture fades-away into another. You can experiment with all different sorts of fades till you have the one that suits you.



There are two zooms but only one picture as you wouldn't be able to tell the difference between them. Zoom out zooms the new pic from the middle of the old one and Zoom in reverses the processs.



Here the zoom service moves the new picture from the top left corner over the old one.



And now you've finally flipped (vertically) and turned the screen image on its head.

movin' & a'groovin'

Lights, action, music . . . Our own top of the pops programmer, Andy Pennell, has brought to light a spectacular all action program that'll knock your eyeballs for six. All you have to supply is the music!

One million pounds — that's how much your Spectrum and this program can save you! No, we haven't caught Bingo fever, so I'd better explain. Have you ever watched the graphic effects on telly programmes like *Top Of The Pops* and wished you and your Speccy could match them? Well, now you can — well, almost — thanks to these routines. OK, so they won't quite turn your Spectrum into a £1,000,000 Quantel, like the Beeb uses, but they'll certainly make your programs go with a swing.

So, what's on offer that'll turn your programs into chart-toppers? Well, all these routines put one picture onto the screen over another in a variety of spectacular ways. You can now pan, fade, zoom in, zoom out, corner zoom, horizontal flip and vertical flip. And if this all sounds like a sort of on-screen breakdance, right on!

THE BASIC LOADER

For the brave, here is the Basic loader that POKEs the code into place and saves it onto Microdrive — change the syntax in line 50 if you're using tape. For the not so brave, remember the complete program is on this month's Digi'T'ape!

```
  1 CLEAR 59999
  5 RESTORE : LET z=0
 10 FOR i=60000 TO 60880
 20 READ a: LET z=z+a
 30 POKE i,a
 40 NEXT i
 45 IF z<>95823 THEN  PRINT "Data
error": STOP
  50 SAVE *"m";1;"IP"CODE 60000,900
1000 DATA 1,176,234,24,40,1,166,234
1010 DATA 24,35,1,221,234,24,30,1
1020 DATA 26,235,24,25,1,244,235,24
1030 DATA 20,1,17,236,24,15,1,46
1040 DATA 236,24,10,195,23,237,0,0
1050 DATA 195,115,237,0,0,243,33,164
1060 DATA 234,229,197,42,11,92,35,126
1070 DATA 254,14,194,138,28,35,35,35
1080 DATA 94,35,86,201,251,201,235,17
1090 DATA 0,64,1,0,27,237,176,201
1100 DATA 33,0,64,24,245,14,31,33
1110 DATA 1,64,17,33,0,229,6,192
1120 DATA 126,43,119,25,16,250,225,229
1130 DATA 17,0,24,25,17,33,0,6
1140 DATA 32,126,43,119,25,16,250,225
1150 DATA 35,13,32,225,201,6,32,213
1160 DATA 221,225,197,205,181,234,221,
229
1170 DATA 6,192,33,31,64,17,32,0
1180 DATA 221,126,0,119,25,221,25,16
1190 DATA 247,221,225,221,229,17,0,24
1200 DATA 221,25,33,31,88,17,32,0
1210 DATA 67,221,126,0,119,25,221,25
1220 DATA 16,247,221,225,221,35,193,16
1230 DATA 201,201,213,221,225,221,229,
33
1240 DATA 0,64,1,0,24,17,7,0
1250 DATA 221,126,0,119,25,221,25,124
1260 DATA 254,88,56,8,38,64,221,124
1270 DATA 214,24,221,103,11,120,177,32
1280 DATA 231,225,17,0,24,25,17,0
1290 DATA 88,1,0,3,237,176,201,221
1300 DATA 94,0,221,86,1,221,70,4
1310 DATA 213,205,130,235,209,221,70,5
1320 DATA 205,164,235,221,94,2,221,86
1330 DATA 3,221,70,4,205,130,235,221
1340 DATA 126,0,221,86,1,221,134,4
1350 DATA 214,1,95,221,70,5,205,164
1360 DATA 235,201,14,8,213,197,213,42
1370 DATA 21,237,25,126,18,19,16,247
1380 DATA 209,193,20,13,32,239,209,205
1390 DATA 234,235,42,21,237,25,72,6
1400 DATA 0,237,176,201,72,120,167,40
1410 DATA 47,213,42,21,237,25,126,18
1420 DATA 205,217,235,16,245,209,221,
229
1430 DATA 121,203,63,203,63,203,63,71
1440 DATA 205,234,235,42,21,237,25,213
1450 DATA 221,225,17,32,0,126,221,119
1460 DATA 0,25,221,25,16,247,221,225
1470 DATA 201,20,122,230,7,32,10,123
1480 DATA 198,32,95,63,159,230,248,130
1490 DATA 87,201,122,15,15,15,230,3
1500 DATA 246,88,87,201,235,17,0,64
1510 DATA 167,237,82,34,21,237,221,33
1520 DATA 181,236,6,16,197,205,79,235
1530 DATA 193,17,6,0,221,25,16,244
1540 DATA 201,235,17,0,64,167,237,82
1550 DATA 34,21,237,221,33,15,237,6
1560 DATA 16,197,205,79,235,193,17,
250
1570 DATA 255,221,25,16,244,201,235,
17
1580 DATA 0,64,167,237,82,34,21,237
1590 DATA 221,33,187,236,6,1,62,192
1600 DATA 221,150,5,203,63,198,8,79
1610 DATA 120,254,16,56,7,121,214,8
1620 DATA 221,134,5,79,197,17,0,64
1630 DATA 205,130,235,17,0,64,193,197
1640 DATA 65,205,164,235,193,197,120,
254
1650 DATA 16,56,8,221,86,3,221,126
1660 DATA 2,24,6,221,86,1,221,126
1670 DATA 0,230,224,95,205,130,235,
193
1680 DATA 197,221,126,0,230,31,95,120
1690 DATA 254,16,56,4,123,238,31,95
1700 DATA 22,64,65,205,164,235,193,17
1710 DATA 6,0,120,254,16,56,3,17
1720 DATA 250,255,221,25,4,120,254,32
1730 DATA 40,10,254,16,32,144,221,33
1740 DATA 15,237,24,138,201,0,64,224
1750 DATA 80,32,192,33,64,193,80,30
1760 DATA 176,66,64,162,80,28,160,67
1770 DATA 64,163,80,26,160,100,64,132
1780 DATA 80,24,144,133,64,101,80,22
1790 DATA 128,134,64,102,80,20,128,
167
1800 DATA 64,71,80,18,112,200,64,40
1810 DATA 80,16,96,233,64,9,80,14
1820 DATA 80,10,72,234,72,12,64,11
1830 DATA 72,235,72,10,64,44,72,204
1840 DATA 72,8,48,77,72,173,72,6
1850 DATA 32,110,72,142,72,4,16,111
1860 DATA 72,143,72,2,16,0,0,33
1870 DATA 15,64,221,33,16,64,14,16
1880 DATA 229,221,229,17,32,0,6,192
1890 DATA 197,126,8,221,126,0,14,128
1900 DATA 23,203,25,48,251,113,8,14
1910 DATA 128,23,203,25,48,251,221,
113
1920 DATA 0,25,221,25,16,227,193,221
1930 DATA 225,225,229,221,229,197,17,
0
1940 DATA 24,25,221,25,17,32,0,6
1950 DATA 24,126,8,221,126,0,119,8
1960 DATA 221,119,0,25,221,25,16,241
1970 DATA 193,221,225,225,221,35,43,
13
1980 DATA 32,174,201,221,33,128,72,33
1990 DATA 96,79,6,12,197,221,229,229
2000 DATA 14,8,221,229,229,6,32,126
2010 DATA 8,221,126,0,119,8,221,119
2020 DATA 0,35,221,35,16,241,225,221
2030 DATA 225,37,221,36,13,32,227,209
2040 DATA 193,197,213,205,234,235,98,
107
2050 DATA 80,89,205,234,235,6,32,26
2060 DATA 8,126,18,8,119,35,19,16
2070 DATA 246,225,221,225,193,17,32,0
2080 DATA 221,125,254,224,32,3,17,32
2090 DATA 7,167,237,82,221,25,16,172
2100 DATA 201
```

TOP OF THE POPS

Here then are the routines that'll hype your Spectrum into the hippest hardware around. Let's begin by looking at how the Basic functions interact with the machine code. When a function gets called, the values of any parameters are stored in the DEF FN statement, though you never actually see them in your listing. The following routines utilise this fact, along with the system variable DEF ADD which points to the DEF FN statement, to read the integer parameter. But beware, it makes no checks to see if it's actually an integer, so if you pass it a string or a floating point number it won't notice and may crash.

After the entry points, come the Load and Save routines that save the screen image in memory and then load it from memory onto the screen. They're really quite trivial consisting of a quick LDIR to move the bytes.

```
; entry points
        ORG   60000
        LD    BC,SAVESC
        JR    START
        LD    BC,LOADSC
        JR    START
        LD    BC,ACROSS
        JR    START
        LD    BC,FADE
        JR    START
        LD    BC,ZOOMIN
        JR    START
        LD    BC,ZOOMOT
        JR    START
        LD    BC,TOPLZM
        JR    START
        JP    FLIPHOR
        DEFB 0,0
        JP    FLIPVE
        DEFB 0,0
;general entry point
START   DI    ;for speed
        LD    HL,ENDING
        PUSH HL
        PUSH BC ;the routine
;now get the parameter
        LD    HL,(23563) ;DEFADD
        INC   HL
        LD    A,(HL)
        CP    14 ;check fp marker
        JP    NZ,#1CBA
        INC   HL
        INC   HL
        INC   HL
        LD    E,(HL) ;read the integer
        INC   HL
        LD    D,(HL)
        RET
ENDING EI
        RET
;LOAD SCREEN from location DE
LOADSC EX    DE,HL
        LD    DE,#4000
MOVESC LD    BC,6912
        LDIR ;copy it all
        RET
;SAVE SCREEN to location DE
SAVESC LD    HL,#4000
        JR    MOVESC
```

▼THE PAN

This is a left to right horizontal scroll — SCRHOR scrolls the screen one character square to the left as neatly as possible. Notice that I didn't say as fast as possible — for that you'd have to use LDIR but the disadvantage there is that the bit map moves long before the attributes. They get visibly left behind during the scroll and create one hell of an untidy mess on the screen.

This scroll (and all the other routines here) only moves sections of the bit map at a time, closely followed by the attributes 'under' the section of bit map. That way any annoying flicker is kept to the bare minimum. SCRHOR moves the screen column by column and so avoids the 'diagonal' effect you get by doing it line by line. ACROSS is the main pan routine that scrolls the screen 32 times — after each time, it draws a little bit more of the new screen on the right hand column.

```
;horizontal scroll routine
SCRHOR LD    C,31 ;columns
        LD    HL,#4001
        LD    DE,33
HORIZ   PUSH HL ;save top address
        LD    B,192
HORIZL LD    A,(HL)
        DEC   HL
        LD    (HL),A ;scroll it
        ADD   HL,DE ;next line
        DJNZ HORIZLP
;now do the attrs
        POP   HL
        PUSH HL
        LD    DE,#1800
        ADD   HL,DE
        LD    DE,33
        LD    B,32
HATTR   LD    A,(HL)
        DEC   HL
        LD    (HL),A
        ADD   HL,DE
        DJNZ HATTR ;move a column
        POP   HL
        INC   HL ;next column
        DEC   C
        JR    NZ,HORIZ ;do all columns
        RET

;the horizontal scroll/mix routine
ACROSS LD    B,32 ;scrolls reqd
        PUSH DE
        POP   IX ;the other screen
ACLP    PUSH BC
        CALL SCRHOR ;scroll it
        PUSH IX
;now put the next bit of the other
screen on RHS
        LD    B,192
        LD    HL,#4000+31 ;RHS
        LD    DE,32
HCOPY   LD    A,(IX+0)
        LD    (HL),A ;copy it
        ADD   HL,DE
        ADD   IX,DE ;inc both
        DJNZ HCOPY ;do whole col
        POP   IX
;now copy attrs
        PUSH IX
        LD    DE,#1800
        ADD   IX,DE ;others attrs
        LD    HL,#5800+31
        LD    DE,32
        LD    B,E ;=32
HCPAT   LD    A,(IX+0)
        LD    (HL),A
        ADD   HL,DE
        ADD   IX,DE
        DJNZ HCPAT
        POP   IX
        INC   IX
        POP   BC
        DJNZ ACLP ;do all pict
        RET
```

▼THE FADE

FADE puts a piccy onto the screen by copying every seven bytes and wrapping around when it gets to the end of the screen. Seven is the 'fade factor' which I came up with after trial and error. You're welcome to try other fade factors just so long as they're odd numbers less than 256. That way you can pick your favourite but be warned, some look very boring. If you end up with 7, don't say I didn't tell you!

```
;FADE one screen into another
FADE    PUSH DE
        POP   IX
        PUSH IX
        LD    HL,#4000
        LD    BC,6144
        LD    DE,7 ;fade factor
FADELP LD    A,(IX+0)
        LD    (HL),A ;copy to screen
        ADD   HL,DE
        ADD   IX,DE ;next one
        LD.   A,H
        CP    #58
        JR    C,ONS2
;gone past end of screen si wrap
around
        LD    H,#40
        DEFB #DD
        LD    A,H
        SUB   #18
        DEFB #DD
        LD    H,A
ONS2    DEC   BC
        LD    A,B
        OR    C
        JR    NZ,FADELP ;do all the
screen ;bit map done so copy the attrs
onto display
        POP   HL
        LD    DE,#1800
        ADD   HL,DE
        LD    DE,#5800
        LD    BC,768
        LDIR ;copy them
        RET
```

▼THE ZOOMS

Like all these routines, the zoom is an optical illusion. ZOOM takes the data stored at IX in order to draw a box from one of your pictures onto the screen. It's used in both the zoom in and zoom out routines where you'll see that the box it makes is formed from a horizontal block for the top and bottom, and two vertical blocks for the left and right. DOHORIZ and DOVERT are the general subroutines that draw blocks from a picture in memory onto the screen. The subroutine DEDOWN alters DE so that it points to the pixel directly below it on the screen. DEATTR converts DE from the bit map into the location of the attribute 'under' it.

```
;DRAW BOX IX
ZOOM    LD    E,(IX+0)
        LD    D,(IX+1) ;start address of
top left
        LD    B,(IX+4) ;width
        PUSH DE
        CALL DOHORIZ ;do the top
        POP   DE
        LD    B,(IX+5) ;depth
        CALL DOVERT ;do the left
        LD    E,(IX+2)
        LD    D,(IX+3) ;start of bottom
left
        LD    B,(IX+4) ;width
        CALL DOHORIZ ;do bottom
        LD    A,(IX+0)
        LD    D,(IX+1)
        ADD   A,(IX+4)
        SUB   1
        LD    E,A ;DE=start address of
RHS
        LD    B,(IX+5)
        CALL DOVERT ;do right
        RET

;do a horizontal box
;with starting address
;in DE, width in B
DOHORI LD    C,8 ;pixels high
        PUSH DE ;save address
HBOX    PUSH BC
        PUSH DE
HBOXLP LD    HL,(DISP)
        ADD   HL,DE
        LD    A,(HL)
        LD    (DE),A ;copy
        INC   DE ;go along
        DJNZ HBOXLP ;do a line
        POP   DE
        POP   BC
        INC   D ;DE down a line
        DEC   C
        JR    NZ,HBOX ;do 8 lines
; colour
        POP   DE
        CALL DEATTR
        LD    HL,(DISP)
        ADD   HL,DE
        LD    C,B
        LD    B,0
        LDIR ;copy attrs to screen
        RET
;do a vertical box
;top at DE, B deep
DOVERT LD    C,B ;save for later
        LD    A,B
        AND   A
        JR    Z,NOVERT ;if no box
required
        PUSH DE
DOVELP LD    HL,(DISP)
        ADD   HL,DE
        LD    A,(HL)
        LD    (DE),A ;copy to screen
        CALL DEDOWN ;next pixel down
        DJNZ DOVELP ;do the whole
depth ;now do the colour
        POP   DE
        PUSH IX ;save it
        LD    A,C
        SRL   A
        SRL   A
        SRL   A
        LD    B,A ;height in chars
        CALL DEATTR
        LD    HL,(DISP)
        ADD   HL,DE
        PUSH DE
        POP   IX
        LD    DE,32
VBATTR LD    A,(HL)
        LD    (IX+0),A ;copy a vertical
column
        ADD   HL,DE ;of attrs
        ADD   IX,DE
        DJNZ VBATTR
        POP   IX
NOVERT RET

;alter DE to pixel directly below
```

SHOWIN' OFF

Just to get you going, here's a simple demo program. As all of the routines except the flips, need to be told the address of the picture to be put onto the screen, they use User Defined functions in an unusual way — there are no POKEs or anything to use them. So, you'll have to use the following lines of Basic:

Save screen	**RAND FN S(x)**
Load screen	**RAND FN L(x)**
Horizontal Pan	**RAND FN H(x)**
Fade	**RAND FN F(x)**
Zoom In	**RAND FN I (x)**
Zoom Out	**RAND FN O(x)**
Corner Zoom	**RAND FN T(x)**
Flip Horizontal	**RAND USR fh**
Flip Vertical	**RAND USR fv**

The 'x' in the lines should be the address in memory of the screen you want displayed — or in the case of FN L(x), the address where you want the screen saved.

The demo program loads two pictures called S1 and S2 into memory — you can change these to suit your favourite screens and of course, remember to change the syntax if you're not using microdrives. First, start the program with RUN 9999. After this, a RUN will do and after that a GOTO 1010 is all you need to warm start it. For the sake of simplicity, I've only used two screens in this demo. But just think what you could do if you combined these with Chris Wood's Screen *Scrunger* from YS 13. That way you'd fit many more screens into memory and get a really tremendous moving graphic display. A million quid! Who needs it?

```
 1 CLEAR 38999
10 DEF FN S(A)=USR 60000
20 DEF FN L(A)=USR 60005
30 DEF FN H(A)=USR 60010
40 DEF FN F(A)=USR 60015
50 DEF FN I(A)=USR 60020
60 DEF FN O(A)=USR 60025
70 DEF FN T(A)=USR 60030
80 LET FH-60035
90 LET FV=60040
```

Lines 1-90 This is the basic set-up routine — you'll need to put these lines at the start of all your own programs.

```
1000 LET SJ=46000: LET S2=53000:
LET S3= 39000
1005 LOAD *"m";1;"S3"CODE S1
1006 LOAD *"M";1;"S4"CODE S2
```

Lines 1000-1006 These lines initialise the start of the screen addresses and load in the pictures from Microdrive (if you haven't got drives, replace lines 1005-1006 with the normal cassette loading syntax).

```
1010 RANDOMIZE FN L(S1)
1020 LET A$="PANNING": GO SUB 8000
1030 RANDOMIZE FN H(S2)
1040 GO SUB 8000: RANDOMIZE FN H(S1)
```

Lines 1U10-1040 Panning. This routine simply performs a screen trick, panning in this case, and then scrolls a couple of times before moving onto the next example.

```
1090 FOR I=1 TO 2
1100 LET A$="ZOOM OUT": GO SUB 8000
1110 RANDOMIZE FN O(S2)
```

Lines 1090-1110 Zoom Out.

```
1120 LET A$="ZOOM IN": GO SUB 8000
1130 RANDOMIZE FN I(S1)
1140 NEXT I
```

Lines 1120-1140 Zoom In.

```
1200 LET A$="CORNER ZOOM": GO SUB 80
00
1210 RANDOMIZE FN T(S2)
1220 GO SUB 8000
1230 RANDOMIZE FN T(S1)
```

Lines 1200-1230 Corner Zoom.

```
1300 LET A$="FADING": GO SUB 8000
1310 RANDOMIZE FN F(S2)
1320 GO SUB 8000
1330 RANDOMIZE FN F(S1)
```

Lines 1300-1330 Fading.

```
1400 LET A$="FLIP HORIZONTAL": GO SU
B 8000
1410 RANDOMIZE USR FH
1420 PAUSE 0
1430 RANDOMIZE USR FH
```

Lines 1400-1430 Flip Horizontal.

```
1500 LET A$="FLIP VERTICAL": GO SUB
8000
1510 RANDOMIZE USR FV
1520 PAUSE 0
1530 RANDOMIZE USR FV
```

Lines 1500-1530 Flip Vertical.

```
1600 LET A$="AND ALL OF THEM": GO SU
B 8000
1610 LET D=25
```

Lines 1600-1610 Start of demonstration loop.

```
2000 RANDOMIZE FN O(S1): PAUSE D: RA
NDOMIZE FN I(S2): PAUSE D
2010 RANDOMIZE USR FH: RANDOMIZE FN
S(S3)
2020 RANDOMIZE USR FV: PAUSE D: RAND
OMIZE USR FV: PAUSE D
2030 RANDOMIZE FN F(S1): PAUSE D: RA
NDOMIZE FN F(S2): PAUSE D: RANDOMIZE
FN F(S1): PAUSE D
2040 RANDOMIZE USR FV: PAUSE D
2050 RANDOMIZE FN H(S2): PAUSE D
2060 RANDOMIZE USR FH: RANDOMIZE FN
H(S2): PAUSE D
2070 RANDOMIZE FN O(S3): PAUSE D
2080 RANDOMIZE FN O(S2): PAUSE D
2090 RANDOMIZE FN O(S3): PAUSE D
2100 GO TO 2000
```

Lines 2000-2100 Demonstration loop.

```
8000 PRINT )0;AT 1,(32-LEN A$)/2;" "
;A$;" ";
8010 PAUSE 0: RETURN
```

Lines 8000-8010 This is a short subroutine that prints the title on each screen.

```
9999 CLEAR 59999: LOAD *"M";1;"TP"CO
DE : RUN
```

Lines 9999 Clears space in memory and loads in the Top Of The Pops routine. Use this line in all your programs.

```
DEDOWN INC  D
       LD   A,D
       AND  7
       JR   NZ,EASY
       LD   A,E ;straddles a 1/3
boundary
       ADD  A,32
       LD   E,A
       CCF
       SBC  A,A
       AND  #F8
       ADD  A,D
       LD   D,A
EASY   RET
; convert DE from bit map into attr
file
DEATTR LD   A,D
       RRCA
       RRCA
       RRCA
       AND  #3
       OR   #58
       LD   D,A
       RET
```

▼ ZOOMIN and ZOOMOT are the main zoom entry points that use the box data table and the ZOOM subroutine, though obviously in a different order to create their opposing effects.

```
;ZOOM IN
ZOOMIN EX   DE,HL
       LD   DE,#4000
       AND  A
       SBC  HL,DE
       LD   (DISP),HL :screen
difference
       LD   IX,ZDATA
       LD   B,16 ;no of boxes
ZINLP  PUSH BC
       CALL ZOOM ;do the box
       POP  BC
       LD   DE,6
       ADD  IX,DE
       DJNZ ZINLP
       RET
;ZOOM OUT
ZOOMOT EX   DE,HL
       LD   DE,#4000
       AND  A
       SBC  HL,DE
       LD   (DISP),HL
       LD   IX,ZDATEND
       LD   B,16
ZOUTLP PUSH BC
       CALL ZOOM
       POP  BC
       LD   DE,-6 ;go outwards
       ADD  IX,DE
       DJNZ ZOUTLP
       RET
```

▼ TOPLZM is the routine for a corner zoom from the top left. I'd intended to do zooms from the other three corners but found them much tougher than I'd bargained for. So, now it's up to you to come up with the goods!

```
;ZOOM FROM TOP LEFT
TOPLZM EX   DE,HL
       LD   DE,#4000
       AND  A
       SBC  HL,DE
       LD   (DISP),HL
       LD   IX,ZDATA+6
       LD   B,1
TOPLP  LD   A,192
       SUB  (IX+5)
       SRL  A
       ADD  A,B
       LD   C,A ;=x co-ord reflected
       LD   A,B
       CP   16
       JR   C,TOPZM
       LD   A,C
       SUB  B
       ADD  A,(IX+5) ;handle lower 1/2
       LD   C,A
TOPZM  PUSH BC
       LD   DE,#4000
       CALL DOHORIZ ;top box
       LD   DE,#4000
       POP  BC
       PUSH BC
       LD   B,C
       CALL DOVERT ;left box
       POP  BC
       PUSH BC
       LD   A,B
       CP   16
       JR   C,TOPZM2
       LD   D,(IX+3) ;for lower half
       LD   A,(IX+2)
       JR   TOPZM3
TOPZM2 LD   D,(IX+1) ;for upper half
       LD   A,(IX+0)
TOPZM3 AND  #E0 ;make it the very
left
       LD   E,A
       CALL DOHORIZ ;do the bottom
       POP  BC
       PUSH BC
       LD   A,(IX+0)
       AND  #1F
       LD   E,A ;x co-ord only
       LD   A,B
       CP   16
       JR   C,TOPZM4
       LD   A,E
       XOR  #1F ;reflect x pos for
lower half
   .   LD   E,A
TOPZM4 LD   D.#40 ;top line of
screen
       LD   B,C
       CALL DOVERT ;RIGHT
       POP  BC
       LD   DE,6
       LD   A,B
       CP   16
       JR   C,TOPZM5
       LD   DE,-6
TOPZM5 ADD  IX,DE ;go backwards or
forwards
       INC  B
       LD   A,B
       CP   32
       JR   Z,QUITTZ ;if all done
       CP   16
       JR   NZ,TOPLP
;now do the lower screen
       LD   IX,ZDATEND
       JR   TOPLP
QUITTZ RET
```

▼ The ZDATA table is for the series of boxes that make up a zoom. I worked it out on squared paper. It's also used, though differently, in the TOPLZM routine.

```
; data fir zoom boxs in the form
;top left, bottom right,
;widht (chars), depth (pixels)
ZDATA  DEFW #4000,#50E0
       DEFB 32,192
       DEFW #4021,#50C1
```

```
        DEFB 30,176
        DEFW #4042,#50A2
        DEFB 28,160
        DEFW #4043,#50A3
        DEFB 26,160
        DEFW #4064,#5084
        DEFB 24,144
        DEFW #4085,#5065
        DEFB 22,128
        DEFW #4086,#5066
        DEFB 20,128
        DEFW #40A7,#5047
        DEFB 18,112
        DEFW #40C8,#5028
        DEFB 16,96
        DEFW #40E9,#5009
        DEFB 14,80
        DEFW #480A,#48EA
        DEFB 12,64
        DEFW #480B,#48EB
        DEFB 10,64
        DEFW #482C,#48CC
        DEFB 8,48
        DEFW #484D,#48AD
        DEFB 6,32
        DEFW #486E,#488E
        DEFB 4,16
ZDATEN  DEFW #486F,#488F
        DEFB 2,16
DISP    DEFW 0
```

▼ The horizontal flip is noticeably slower than the vertical one because it has to turn all the bits around for each byte.

```
;flip screen horizontal
FLIPHO LD   HL,#400F ;LHS
       LD   IX,#4010 ;RHS
       LD   C,16 ;width/2
FLIPH  PUSH HL
       PUSH IX
       LD   DE,32
       LD   B,192
       PUSH BC ;SAVE C
FLIPH2 LD   A,(HL)
       EX   AF,AF'
       LD   A,(IX+0)
       LD   C,128
SWITCH RLA
       RR   C
       JR   NC,SWITCH ;turn around
       LD   (HL),C
       EX   AF,AF'
       LD   C,128
SWIT2  RLA
       RR   C
       JR   NC,SWIT2 ;turn around
       LD   (IX+0),C ;swap them over
       ADD  HL,DE
       ADD  IX,DE
       DJNZ FLIPH2 ;swop a colmun
;now do colour
       POP  BC
       POP  IX
       POP  HL
       PUSH HL
       PUSH IX
       PUSH BC
       LD   DE,#1800
       ADD  HL,DE
       ADD  IX,DE
       LD   DE,32
       LD   B,24
FLATTR LD   A,(HL)
       EX   AF,AF'
       LD   A,(IX+0)
       LD   (HL),A
       EX   AF,AF'
       LD   (IX+0),A ;swap attrs
       ADD  HL,DE
       ADD  IX,DE
       DJNZ FLATTR ;do a column
       POP  BC
       POP  IX
       POP  HL
       INC  IX ;more right
       DEC  HL ;move left
       DEC  C
       JR   NZ,FLIPH ;do all the
columns
       RET
;FLIP VERTICAL
FLIPVE LD   IX,#4880
       LD   HL,#4F60
       LD   B,12
FVERT  PUSH BC
       PUSH IX
       PUSH HL
       LD   C,B
;swop two rows
SWVER2 PUSH IX
       PUSH HL
       LD   B,32
SWVERT LD   A,(HL)
       EX   AF,AF'
       LD   A,(IX+0)
       LD   (HL),A
       EX   AF,AF'
       LD   (IX+0),A ;swap them
       INC  HL
       INC  IX
       DJNZ SWVERT ;swop a pixel line
       POP  HL
       POP  IX
       DEC  H ;up a pixel
       DEFB #DD
       INC  H ;down a pixel
       DEC  C
       JR   NZ,SWVER2 ;swop two rows
;colour now
       POP  DE ;HL
       POP  BC ;IX
       PUSH BC
       PUSH DE
       CALL DEATTR
       LD   H,D
       LD   L,E ;HL=one line
       LD   D,B
       LD   E,C
       CALL DEATTR ;DE=other
       LD   B,32
SVATTR LD   A,(DE)
       EX   AF,AF'
       LD   A,(HL)
       LD   (DE),A
       EX   AF,AF'
       LD   (HL),A ;swap attrs
       INC  HL
       INC  DE
       DJNZ SVATTR ;do the whole row
       POP  HL
       POP  IX
       POP  BC
;now make HL go up,IX down
       LD   DE,32
       DEFB #DD
       LD   A,L
       CP   #E0
       JR   NZ,EASYUP
       LD   DE,#720 ;if over a
boundary
EASYUP AND  A
       SBC  HL,DE ;up
       ADD  IX,DE ;down
       DJNZ FVERT ;do 12x2 lines
       RET
       END
```

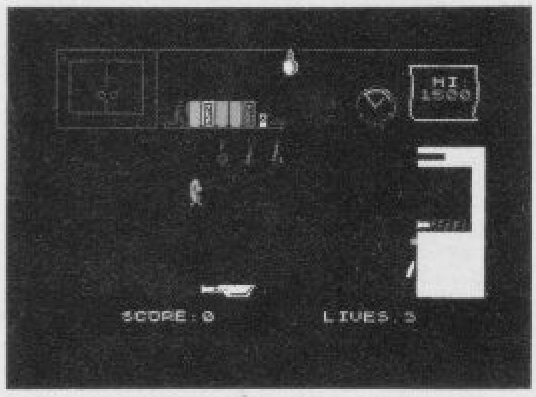
What's cooking then? It's a high-calorie caper in the kitchen from Christopher Hardy. *So, if you're hungry for a great game, this one certainly has the recipe for success!*

KITCHEN CHAOS

Wakey, wakey! Rise'n'shine. Breakfast's ready — or rather it's ready and waiting to be cooked. And it looks like it's down to you to cook up this cholesterol-rich culinary concoction. So, isn't it about time you got galloping, gourmet?

Sid Sausage, Iggy Egg and Chas Chip all have to make their way to the frying pan but they're not going to do it without your help. The three of them drop from the larder and it's your job to bounce them across the room to the cooker. At first, it's a bit of a doddle but things soon start to hot up. And as the man said, if you can't stand the heat, stay out of the kitchen!

To control your patented bits bouncer you'll only need to use the Z key to go left and the X key to go, wait for it, right! This really has all the ingredients of a great game so 'way you go ... But watch that you don't end up with egg on your face!



Let's see what's cookin' ... not a lot of things, Sid Sausage is not too keen to jump into that frying pan ... keep trying .. sizzle, sizzle ...

This program is available on Digi'T'ape

```
  1 LET hi=1500
  5 DIM v(3,48): DIM z(3)
 10 DIM p(3): LET p(1)=3: LET p(2)=6: LET p(3)=7
 15 DIM i(3): DIM z(3)
 17 DIM s(3)
 20 DIM d(3): DIM e(3)
 25 FOR f=1 TO 3: LET d(f)=8: LET e(f)=3: NEXT f
 30 RESTORE 1000
 40 GO SUB 1000
 55 RESTORE 700
 60 FOR g=1 TO 3: FOR f=1 TO 48
 61 READ v(g,f): NEXT f: NEXT g
 90 LET li=3
 95 LET sc=0
100 REM variables
110 LET h=1: LET h1=h
115 FOR f=1 TO 3: LET z(f)=1: NEXT f
120 LET c=0
121 LET y=8
122 LET x=3
125 LET s(1)=1
126 LET i(1)=1
130 FOR f=2 TO 3: LET s(f)=INT (RND*60+40): NEXT
 f
150 GO SUB 900
```

Lines 1-150 Set up and intialise arrays and game variables. This portion also calls the subroutine to set up the UDGs.

```
170 LET le=13: GO SUB 3010
190 GO TO 500
```

Lines 170-190 These lines play the tune and then start the game proper.

```
500 REM loop
501 LET c=c+1
510 FOR n=1 TO 3
511 IF c=s(n) THEN  LET i(n)=1
513 IF NOT i(n) THEN  GO TO 537
515 LET y=v(n,z(n)): LET x=v(n,z(n)+1): LET z(n)
=z(n)+2
520 PRINT  INK p(n);AT y-1,x;CHR$ (146+2*n);AT y
,x;CHR$ (147+2*n)
523 PRINT AT d(n)-1,e(n);" ";AT d(n),e(n);" ": L
ET d(n)=y: LET e(n)=x
531 IF y=17 AND ATTR (y+1,x)<>7 THEN  FOR f=1 TO
 10: PRINT  INK RND*7;AT y+1,x;"  ";AT y,x;"  ";A
T y-1,x;"  ": BEEP .001,50: NEXT f: GO TO 600
535 IF z(n)=49 THEN  LET z(n)=1: GO SUB 800: PRI
NT  INK 4;AT 9,28;"  ";AT 10,28;"  ";AT 11,28;"  
": BEEP .1,-7: BEEP .01,20: PRINT AT 11,28;"  "
538 IF INKEY$="" THEN  GO TO 557
539 PRINT  INK 4;AT 18,h;"    "
540 IF INKEY$="x" AND h<21 THEN  LET h=h+10: BEE
P .05,0
545 IF INKEY$="z" AND h>1 THEN  LET h=h-10: BEEP
 .05,-10
557 PRINT  INK 7;AT 18,h;"    "
560 NEXT n
590 GO TO 500
600 REM endgame
610 LET li=li-1: PRINT AT 20,26;li: IF li=0 THEN
 GO TO 660
615 FOR f=1 TO 3: LET z(f)=1: LET i(f)=0: NEXT f
620 FOR f=1 TO 10: BEEP .01,f: NEXT f
630 FOR f=60 TO 10 STEP -5: BEEP .01,f: NEXT f
650 GO TO 100
```

Lines 500-650 This is the main loop. Notice the clever use of attribute checking rather than the standard ScreenS method.

```
660 REM The End!
663 IF sc>hi THEN  LET hi=sc
665 FOR f=1 TO 3: LET z(f)=1: LET i(f)=0: NEXT f
670 GO SUB 3000
680 PAPER 0: BORDER 0: INK 7: CLS
690 FOR f=1 TO 3: PRINT : NEXT f
692 PRINT "          K I T C H E N"
693 PRINT : PRINT
694 PRINT "             C H A O S"
695 PRINT : PRINT TAB 8; INK 2; BRIGHT 1;"YOUR S
CORE: ";sc
696 PRINT  INK 6;AT 16,5;" ";AT 17,5;" "; INK 7;
AT 16,24;" ";AT 17,24;" "
697 PRINT  INK 6; PAPER 1; FLASH 1;AT 21,6;"PRES
S SPACE TO PLAY"
698 IF INKEY$=" " THEN  BEEP .2,5: GO TO 90
699 GO TO 698
```

Lines 660-699 This is the Game Over routine.

```
700 REM data
705 REM for flight
706 REM ____________
710 DATA 8,3,9,3,11,3,13,3,15,3,17,3,15,4,13,5,1
1,6,10,8,11,10,13,11,15,12,17,13,15,14,13,16,12,1
8,13,20,15,22,17,23,15,24,13,25,11,27,10,29
720 DATA 8,3,9,3,11,3,13,3,15,3,17,3,15,4,13,5,1
1,6,10,8,11,10,13,11,15,12,17,13,15,14,13,16,12,1
8,13,20,15,22,17,23,15,24,13,25,11,27,10,29
730 DATA 8,3,9,3,11,3,13,3,15,3,17,3,15,4,13,5,1
1,6,10,8,11,10,13,11,15,12,17,13,15,14,13,16,12,1
8,13,20,15,22,17,23,15,24,13,25,11,27,10,29
```

Lines 700-710 This is the data to tell the program how the objects will move — crude but faster than calculation.

```
800 REM score
810 LET sc=sc+(100*n): PRINT  INK 7; BRIGHT 1;AT
 20,11;sc
820 IF n>1 THEN  LET c=0: LET i(n)=0: LET s(n)=I
NT (RND*10)+1
830 RETURN
```

Lines 800-830 This increments and prints the score.

```
900 REM screen
910 PAPER 0: BORDER 0: INK 4: CLS
920 PLOT 0,175: DRAW 60,0: DRAW 0,-48: DRAW -60,
0: DRAW 0,48
925 PLOT 8,168: DRAW 44,0: DRAW 0,-32: DRAW -44,
0: DRAW 0,32
927 PLOT 30,168: DRAW 0,-32
928 PLOT 65,127: DRAW 70,0: DRAW 0,3: DRAW -70,0
: DRAW 0,-3
929 PLOT 61,175: DRAW 188,0
930 PRINT AT 3,3;"o";AT 3,4;"o"
935 PRINT  INK 2; BRIGHT 1;AT 0,17;" "; INK 6;AT
 1,17;" "
940 FOR f=19 TO 21: PRINT  INK 1;AT f,0;"
                                ": NEXT f
950 PRINT  INK 7;AT 7,27;"     ";AT 8,27;"     "
: FOR f=9 TO 13: PRINT  INK 7;AT f,31;" ": NEXT f
```

```
: FOR f=14 TO 18: PRINT  INK 7;AT f,27;"■■■■■": N
EXT f
 953 PRINT  INK 3;AT 14,26;" ▪"
 955 PRINT  INK 6;AT 13,27;"▬"; INK 5;AT 13,28;"▚
▬"
 960 PRINT  INK 7;AT 20,5;"SCORE:";sc
 970 PRINT  INK 7;AT 20,20;"LIVES:";li
 973 CIRCLE  INK 5;190,140,10: CIRCLE  INK 5;190,
140,12: INK 7: PLOT 190,140: DRAW 5,5: PLOT 190,1
40: DRAW -5,7
 975 PRINT  INK 5;AT 4,9;"▨";AT 5,9;"▨"; INK 2;AT
 4,10;"■";AT 5,10;"■"; INK 7;AT 4,11;"▨";AT 5,11;
"▨"; INK 3;AT 4,12;"■■▨";AT 5,12;"■■▨"
 976 PRINT  INK 7;AT 5,15;"▯"
 980 PRINT  INK 5;AT 7,12;"▯ ▯ ▯";AT 8,12;"◉ ◉ ◉"
 983 PLOT 210,165: DRAW 40,0: DRAW 1,-20: DRAW -3
,-10: DRAW 3,-3: DRAW -37,0: DRAW -3,3: DRAW 1,20
: DRAW -1,10
 985 PRINT  INK 6;AT 2,28;"HI:"; INK 2;AT 3,27;hi
 990 RETURN
```

Lines 900-990 This draws the natty background to the game.

```
1000 REM udg
1010 FOR g=USR "a" TO USR "u"+7: READ a: POKE g,a
: NEXT g: RETURN
1020 DATA 0,128,255,254,255,128,0,0,0,63,255,45,2
55,7,3,1,0,255,255,255,255,255,128,255,0,255,250,
244,232,232,24,240
1030 DATA 24,60,124,124,108,111,111,124,112,124,1
22,58,58,28,34,99
1040 DATA 0,54,127,255,231,215,74,195,231,255,254
,116,36,66,195,0
1050 DATA 252,244,244,122,74,202,234,122,29,125,6
1,61,61,61,61,127
1060 DATA 24,24,60,36,60,36,60,126,251,253,253,25
3,253,253,122,60
1070 DATA 8,0,26,25,8,35,51,1,0,134,106,96,74,24,
32,0
1080 DATA 254,130,146,186,146,162,170,178,162,186
,146,186,162,186,130,124
1090 DATA 254,254,254,254,254,254,254,254,254,254
,254,254,254,254,254,124
1100 DATA 24,36,24,24,24,24,24,24,24,52,122,122,1
22,122,52,24
1110 DATA 60,36,36,24,36,60,60,60
```

Lines 1000-1100 This is the data for the UDGs.

```
3000 REM tune
3005 LET le=32
3010 RESTORE 3000
3020 FOR f=1 TO le: READ note: READ pause
3030 BEEP .1*pause,note: PAUSE pause
3035 BEEP .01,note
3040 NEXT f
3045 FOR f=60 TO 1 STEP -3: BEEP .01,f: NEXT f
3050 RETURN
3060 DATA 8,2,5,2,8,4,8,2,5,2,8,4,10,2,8,2,6,2,5,
2,3,2,5,2,6,2,5,1,6,1,8,2,1,2,1,1,1,1,1,2,1,1,3,1
,5,1,6,1,8,4,8,2,3,2,3,2,6,2,5,2,3,2,1,8
```

Lines 3000-3060 This is the data and routine for the music.

Here at *YS* we print the best programs around, but we don't write them ... you do! So, if you have a mega wonderful program send it off to Gavin Monk, Program Power, *Your Spectrum*, 14 Rathbone Place, London W1P 1DE.

MON CREATION

OK, here it is — my program that'll knock yer socks off — please be as kind as possible.

Program title ....

Program length ....K Machine Code/Basic*
* Delete as applicable

Name ....

Address ....

....

....

.................................Postcode ....

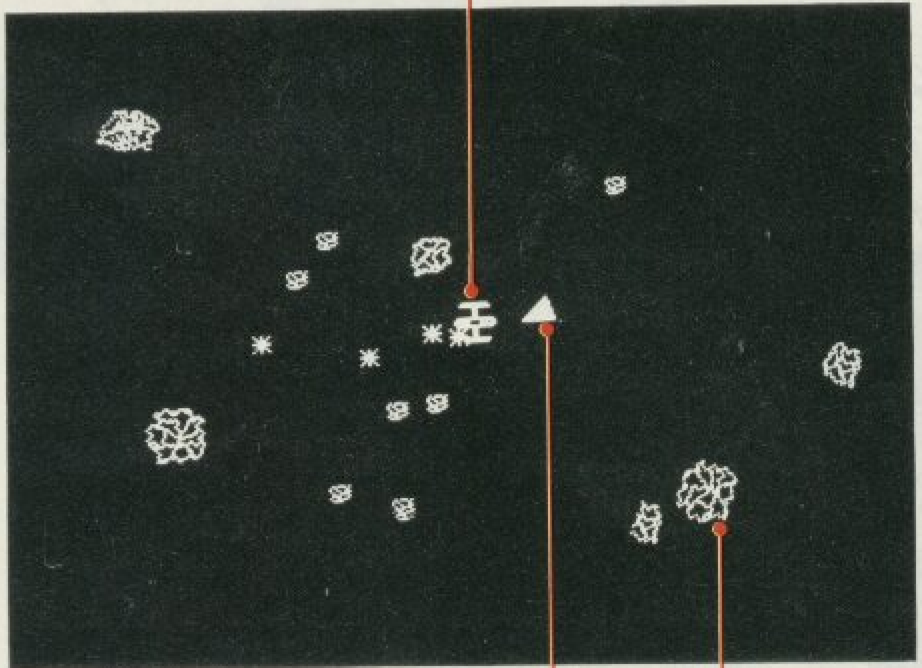
Of course, I understand that if my program is not completely my own work then I will be force fed my listing!

MACROIDS

Who's that knocking on the door? It's* Stuart Jamieson *with an amazing version of the arcade fave,* Asteroids. *Prepare for piles of fun ...

As well as the Asteroids, watch out for the alien spaceships. On the first screen they fly like crows, in straight lines, so they're easy to pick off. As for the later screens, well you'll just have to find out yourself ...

Playing piggy in the middle is a good tactic for starters. If you really need to move, then use hyperspace rather than thrust. Once you start floating around you can consider yourself a gonner.



The controls on your ship are very simple, so don't worry if you ain't Mr Spock. You can turn left, right and go forward — that's all. Oh, and if you really get into big trouble you can zoom off into hyperspace.

Looks easy, doesn't it? Those big lumbering asteroids just float around waiting to be zapped. Just one thing, though — they divide on impact. Now there's two of them, then four and now you've got problems ...

You remember Stuart Jamieson? He of *Mac Man* fame in *YS* issue 12? Well, now he's done the seemingly impossible — a version of *Asteroids* that fits into just under 5K — and it still includes features that you'd only expect to find in programs ten times that size.

The theme of *Macroids* can be summed up in one word — survival. You're stranded at the centre of the solar system and only your ship's armaments stand between you and a stupendous asteroid field. Can you face the final frontier?

Huh, so you had the arcade game sussed ages ago, eh? You're thinking there's no challenge here? Well, think again — *Macroids* is tougher than any arcade *Asteroids*. So far the *YS* crew has yet to make it to the second sheet. (*Ahem, my hand slipped! Ed*)

Use the main menu options to define the keys that'll let you take control of your ship. And that's all that stands between you and hours and hours of alien annihilation.

OUT OF TIME

Have you been telling yourself that you've got all the time in the world to come up with your entry for Opportunity Knocks? All in good time, eh? Well, think again. Time's running out. You'd best get a move on if you're to stand any chance of reserving your place in the compo. Of the six programs to be published, there are only four places left. Take a look at the *Macroids* and last month's *Bounzai* to see the standard that we're after and try to keep the size of your programs within the limits that we can fit into the mag — 5K's about right. Beyond that there are no restrictions — just so long as your program's truly brilliant, imaginative and does what you say it does.

When we've chosen our six finalists, we'll be asking you all to pick the overall winner. Then you'll have the chance to vote for the program you reckon knocks the top six for six.

All we ask is that your program really knocks our socks off if you want opportunity to come a 'knockin'!

This program is available on Digi'T'ape

DON'T READ THIS ...

... until you're tearing your hair out in total desperation!

If you've been defeated by the sheer impossibility of completing the first screen of *Macroids*, let alone the whole game, here are a couple of POKEs, courtesy of Stuart, that'll give you a helping hand:
POKE 40383,0 for infinite lives
POKE 43210,0: POKE 43211,0 if you want total immunity from everything.

THE BASIC LOADER

Type this short program in and save it at the start of your *Macroids* master — that's before the main code, of course!

```
 10 PAPER 0: INK 0: BRIGHT 1: B
ORDER 0: CLS
 20 PRINT AT 9,12; INK 7;"MACAR
OID";TAB 299;"IS LOADING"
 30 LOAD ""CODE
 40 RANDOMIZE USR 40000
```

THE HEX LOADER

Here's the program that'll let you get on with the business of entering the Hex code. What d'you mean you're ready to give up already? Well, the program's on Digi'T'ape, so you're OK!

```
  1 REM HEX Loader for Macaroids
  5 POKE 23658,8
  9 CLEAR 39999
 10 FOR i=4e4 TO 4e4+4972 STEP
8
 20 LET cs=0
 30 PRINT AT 0,0;"Address ";i
 40 INPUT "Hex 8 Bytes", LINE a
$
 60 IF LEN a$<>16 THEN  GO TO 1
000
 80 LET f=0: FOR j=1 TO 16
 90 IF (a$(j)<"0" OR a$(j)>"9")
 AND (a$(j)<"A" OR a$(j)>"F") TH
EN  LET f=1
 100 NEXT j
 105 IF f=1 THEN  GO TO 1000
 110 FOR n=0 TO 7
 120 LET y=CODE a$(1)-48: IF y>9
 THEN  LET y=y-7
 130 LET z=CODE a$(2)-48: IF z>9
 THEN  LET z=z-7
 140 LET va=16*y+z
 150 LET cs=cs+va
 160 POKE i+n,va
 165 PRINT AT 2,n*3;a$( TO 2)
 170 LET a$=a$(3 TO )
 180 NEXT n
 183 INPUT "Checksum "; LINE a$
 184 PRINT AT 2,25;a$
 185 IF VAL a$<>cs THEN  GO TO 1
000
 187 CLS
 190 NEXT i
 200 CLS : PRINT "SAVE CODE AFTE
R BASIC LOADER."''"REMOVE EAR LE
AD"
 210 SAVE "maccode"CODE 40000,49
72
 220 CLS : PRINT "VERIFYING"
 230 VERIFY ""CODE
 240 CLS : PRINT "ALL OK": STOP
1000 PRINT AT 15,0;"ERROR": GO T
O 20
```

THE HEX DATA

Type this code into your Speccy using the Hex Loader. And don't despair, Rome wasn't programmed in a day!

```
40000 F3 CD 60 AE AF D3 FE 32 =1408
40008 48 5C CD BF A1 CD 2A 9D =1077
40016 3E F7 DB FE CB 47 28 09 =1105
40024 CB 4F 20 F1 CD 5E 9D 18 =1035
40032 E9 CD BE 9D 21 5A B2 11 =1103
40040 11 9D 06 03 1A BE 28 04 =443
40048 30 D8 18 06 13 23 10 F4 =608
40056 18 D0 11 11 9D 21 5A B2 =724
40064 01 03 00 ED B0 18 C3 4D =713
40072 41 43 41 52 4F 49 44 57 =586
40080 52 49 54 54 45 4E 20 42 =568
40088 59 20 53 54 55 41 52 54 =604
40096 20 4A 41 4D 49 45 53 4F =552
40104 4E 20 7F 31 39 38 35 31 =501
40112 20 20 50 4C 41 59 20 47 =477
40120 41 4D 45 32 20 20 44 45 =462
40128 46 49 4E 45 20 4B 45 59 =555
40136 53 48 49 47 48 53 43 4F =600
40144 52 45 4C 41 53 54 20 53 =574
40152 43 4F 52 45 50 52 45 53 =611
40160 53 20 4B 45 59 20 46 4F =529
40168 52 52 2E 20 4C 45 46 54 =541
40176 20 52 2E 20 52 49 47 48 =490
```

```
40184 54 54 48 52 55 53 54 20 =606
40192 20 46 49 52 45 20 20 20 =422
40200 20 48 59 50 45 52 44 52 =574
40208 56 00 00 08 2C 40 20 =234
40216 80 40 0C EA 40 0E 49 48 =661
40224 09 C8 48 0A 27 50 D2 48 =692
40232 33 50 11 87 9C 06 06 21 =484
40240 14 9D C5 46 23 4E 23 E5 =821
40248 66 69 22 58 B2 CD 28 A1 =913
40256 E1 23 C1 10 ED 11 11 9D =897
40264 CD 4E 9D 11 5A B2 4E 23 =838
40272 E5 66 69 22 58 B2 EB CD =1176
40280 D8 A0 EB E1 23 C9 CD BF =1420
40288 A1 CD B3 9D 21 64 48 11 =924
40296 DC 9C 06 0D 22 58 B2 CD =900
40304 28 A1 DD 21 18 A9 06 05 =659
40312 C5 06 08 21 75 48 22 58 =555
40320 B2 CD 28 A1 D5 CD 92 9D =1305
40328 D1 DD 77 00 DD 23 C1 10 =1014
40336 E7 C9 1E 00 01 FE FE ED =1208
40344 78 2F E6 1F 28 0B CB 27 =721
40352 CB 27 CB 27 B3 CD B3 9D =1204
40360 C9 CB 00 1C 7B FE 08 20 =849
40368 E6 18 DF 01 00 00 F5 0B =734
40376 78 B1 20 FB F1 C9 3E 04 =1088
40384 32 52 B2 CD 8F A1 CD 7C =1148
40392 A0 CD 3E A5 CD 76 A7 CD =1287
40400 1E AB CD 62 A9 CD 91 A3 =1186
40408 CD 9E AB 3A 54 B2 A7 28 =1058
40416 E8 FE FF 28 2D CD 8F A1 =1335
40424 CD B4 A1 CD F7 9D CD 95 =1509
40432 A0 AF 32 54 B2 18 D2 CD =1086
40440 34 A1 CD 74 A1 CD CF A0 =1267
40448 CD 81 A1 06 96 FD 21 3A =995
40456 5C FB 76 10 FD F3 CD 8F =1321
40464 A1 C9 AF 32 54 B2 3A 52 =989
40472 B2 3D A7 28 12 32 52 B2 =774
40480 AF CD 3A 9E CD 8F A1 CD =1310
40488 F7 9D CD 82 A0 18 9A 06 =1083
40496 06 C5 AF CD 3A 9E C1 10 =1008
40504 F8 C9 A7 28 27 DD E5 C5 =1342
40512 D5 E5 CB 27 5F 16 00 21 =834
40520 5A 9E 19 5E 23 66 6B 11 =628
40528 01 00 CD B5 03 F3 E1 D1 =1067
40536 C1 DD E1 C9 8C 00 BE 00 =1170
40544 28 00 00 01 E5 C5 26 04 =509
40552 46 2B 10 FE D3 FE EE 10 =1102
40560 08 7C B5 28 03 08 18 F0 =628
40568 08 C1 E1 C9 00 00 00 00 =627
40576 01 00 01 00 03 80 03 80 =264
40584 07 C0 07 C0 0F E0 0F E0 =876
40592 0F E0 1F F0 1F F0 3F F8 =1092
40600 3F F8 00 00 00 00 00 00 =311
40608 00 00 40 00 C0 01 C0 03 C0 =644
40616 07 C0 0F C0 1F C0 3F C0 =884
40624 7F C0 FF C0 3F C0 07 C0 =1220
40632 00 C0 00 00 00 00 00 00 =192
40640 00 00 00 00 0C 00 7C 01 F8 =385
40648 07 F8 1F F8 7F F0 3F F0 =1204
40656 1F E0 0F E0 07 C0 03 C0 =888
40664 01 80 00 80 00 00 00 00 =257
40672 00 00 00 00 00 00 00 00 =0
40680 3F FE 3F FC 1F F8 1F F0 =1182
40688 1F E0 0F C0 0F 80 0F 00 =620
40696 06 00 04 00 00 00 00 00 =10
40704 00 00 00 00 30 00 3C 00 =108
40712 3F 80 3F E0 3F F8 3F FE =1106
40720 3F F8 3F E0 3F 80 3C 00 =849
40728 30 00 00 00 00 00 00 00 =48
40736 04 00 06 00 0F 00 0F 80 =168
40744 0F C0 1F E0 1F F0 1F F8 =1012
40752 3F FC 3F FE 00 00 00 00 =632
40760 00 00 00 00 00 00 00 00 =0
40768 01 00 03 00 07 80 0F 80 =282
40776 1F C0 3F C0 7F E0 FF E0 =1308
40784 3F F0 0F F0 03 F0 00 F8 =1049
40792 00 18 00 00 00 00 00 00 =24
40800 00 00 00 C0 07 C0 3F C0 =646
40808 FF C0 7F C0 3F C0 1F C0 =1244
40816 0F C0 07 C0 03 C0 01 C0 =794
40824 00 C0 00 40 00 00 00 00 =256
40832 00 00 00 00 3F F8 3F F8 =622
40840 1F F0 1F F0 0F E0 0F E0 =1020
40848 0F E0 07 C0 07 C0 03 80 =768
40856 03 80 01 00 00 00 00 00 =132
40864 0C 00 0F C0 0F F8 0F FE =751
40872 0F FC 0F F8 0F F0 0F E0 =1024
40880 0F C0 0F 80 0F 00 0E 00 =379
40888 0C 00 08 00 00 00 00 00 =20
40896 01 00 01 80 03 C0 03 E0 =552
40904 07 F0 07 F8 0F FC 0F FE =1038
40912 1F F8 1F E0 1F 80 3E 00 =755
40920 30 00 00 00 00 00 00 00 =48
40928 00 00 00 20 00 60 00 F0 =368
40936 01 F0 03 F0 07 F8 0F F8 =1002
40944 1F F8 3F FC 7F FC 00 00 =973
40952 00 00 00 00 00 00 00 00 =0
40960 00 00 00 00 00 18 00 78 =144
40968 03 F8 0F F8 3F F8 FF F8 =1328
40976 3F F8 0F F8 03 F8 00 78 =945
```

```
40984 00 18 00 00 00 00 00 00 =24
40992 00 00 00 00 00 00 7F FC =379
41000 3F FC 1F F8 0F F8 07 F8 =1112
41008 03 F0 01 F0 00 F0 00 60 =820
41016 00 20 00 00 00 00 00 00 =32
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44720 10 C5 EB 56 23 5E 23 EB =933
44728 D5 D9 EB 56 23 5E 23 EB =1150
44736 D5 D9 3A 86 B3 A7 06 00 =974
44744 28 0B 47 AF CB 25 CB 14 =760
44752 CB 17 10 F8 47 D9 3A 88 =972
44760 B3 A7 06 00 28 0B 47 AF =649
44768 CB 25 CB 14 CB 17 10 F8 =953
44776 47 D9 CD F8 AE CD C0 AD =1485
44784 D9 D1 D9 D1 C1 10 BA C9 =1448
44792 E5 D1 0E 00 2A 8A B3 78 =931
44800 CD 1A AE D9 E5 D1 0E 00 =1074
44808 08 78 2A 8C B3 CD 1A AE =894
44816 08 D9 C9 D9 CD 40 AE 2F =1133
44824 E6 07 32 88 B3 22 8C B3 =955
44832 D9 CD 40 AE 2F E6 07 32 =994
44840 86 B3 22 8A B3 06 08 C5 =875
44848 EB 56 23 EB D5 D9 EB 56 =1342
44856 23 EB D5 D9 3A 86 B3 06 =1077
44864 00 A7 28 09 47 AF CB 24 =701
44872 CB 17 10 FA 47 D9 3A 88 =974
44880 B3 06 00 A7 28 09 47 AF =647
44888 CB 24 CB 17 10 FA 47 D9 =1019
44896 CD 6E AF CD C0 AD D9 D1 =1486
44904 D9 D1 C1 10 C2 C9 E5 D1 =1468
44912 0E 00 1E 00 2A 8A B3 78 =523
44920 CD 1A AE D9 E5 D1 0E 00 =1074
44928 1E 00 78 2A 8C B3 CD 1A =742
44936 AE D9 C9 C5 D9 C1 11 AC =1388
44944 AF D9 CD 13 AF C9 C5 D9 =1406
44952 C1 11 AC AF D9 CD 95 AE =1302
44960 C9 C5 D9 C1 11 AC AF D9 =1389
44968 CD 5A AD C9 00 00 00 00 =669
STOP
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■ Will swop *Tobor, Horace Goes Skiing, Chess Tutor, Grid-Bug, Gnasher* and *Flight Simulator* for *Zombie Zombie* or others. Tel. (0572) 56525 and ask for Hugo.

■ Swop *Sherlock, Cavelon, Buggy Blast, JSW, Alchemist* and *Horace Goes Skiing* for *Doomdark's Revenge* or *Everyone's A Wally*. Tel. 051-494 0936 and ask for P Kenton.

■ Swop *Lords of Midnight* or *Doomdark* for any Level 9 except *Colossal Adventure*. Also swop *Tower of Despair* for *Eye of Bain* or *Heroes of Karn*. Tel. 01-876 0516 and ask for B Logue.

■ Swop *HURG, Wally, Pyjamarama, Ghostbusters, Minder, Gyron, Hellfire, Softaid, TLL* or *Pitfall II* for any of *Shadowfire, Starion, Cauldron, Spy v Spy, Knightlore, One on One, Deathstar Interceptor, Avalon* or *Pole Position*. Or any five for Rat. Tel. Northwood 29079 and ask for Dan.

■ I have *Airwolf, Zip-Zap* and *Grant's Revenge*. Will swop for *Ghostbusters*. Write to Jonathan Aiken, 1 Ulster Avenue, Annalong, County Down, Northern Ireland BTX 34.

■ I have over 700 commercial Spectrum programs to swop. Send your list for mine to Vrca Milan, Zarija Vujosevica 79, 11079 Novi Beograd Yugoslavia.

■ Swop *Zip-Zap, Androids, Galaxy Attack, Match Day, Stop The Express, Blue Thunder* for *JSW, Raid over Moscow, Alien 8* and *Grand National*. Any two for all six of mine. Write to John E Thornhill, 280 Signals Unit, RAF Troodos, Cyprus, BFPO 57.

■ Many top games to swop. Send your list for mine with sae. I'm looking for *Tasprint, Tascopy, Masterfile* etc. Write to Gordon Chalmers, 18 Curlinghaugh Crescent, Wishaw, Strathclyde ML2 8JR.

■ Swop *Alchemist, Booty, Zip Zap, Blue Thunder, Monty Mole, The Drive in*, and *Ghostbusters*. Want Currah MicroSpeech. Tel. Bracknell, Berkshire, 53445 and ask for Andrew.

■ Spectrum software to swop. Send your list for mine. Write to C Pauton, 21 Ramford Street, Parr, St Helen's, Merseyside.

■ Swop over 40 games including *Baseball, Bruce Lee, Raid over Moscow* and *Technician Ted*. Want!! *System 15000, Sky Ranger, Gift from the Gods, Alien, Grand National*, etc. Tel. Skelmersdale, Lancs (75) 21164 and ask for John.

■ Swop *Knight Lore* or *Sabrewulf* for *Underwurlde*. Tel. (09853) 442 and ask for Claris.

■ Swop *Underwurlde, Automania, Frank 'n' Stein* and quite a few more. Tel. (0742) 322060 and ask for Richard.

■ New titles for the Spectrum to swop. Send your list for mine. Write to Aernoud van de Graaf, Kievitlaan 3 2261ER Leidschendam, Holland.

■ Swop *Jack and Beanstalk, Avalon, Booty, Knightlore, Moon Cresta* and *Doomsday Castle* for *Jet Set Willy, Underwurlde, Monty Mole, Pole Position* and *Strangeloop*. Tel. Hove 732 873 and ask for Peter.

■ Have lots of games to swop. Including *Alien 8, Ant Attack, Scuba Dive, Hall of Things* etc. Send your lists to Simon Lennox, 53 Main Street, Castledown, Co. Londonderry, N Ireland BT4 58AA.

■ Swop 6 pack and other games for *The Quill, Starion* or hardware, eg Dk Light Pen. Write to J Baxter, 19 Weghill Road, Preston, Hull HY12 8UN.

■ Swop *Tasmerge* or *Gyron* and/or *Toolkit* for *Omnicalc*. Tel. Oxted 6175 and ask for S F Clark.

■ Swop *Giant's Revenge, 3D Starstrike, Flight Simulation* and *Strangloop* for *White Lightning, Everyone's a Wally, Broad Street* or others. Tel. (0706) 523173 and ask for Graham.

■ Swop *Alien* or *Combat Lynx* for *Rally Driver* or *Run For Gold*. Write to David Keith, 248 Pappert Estate, Bonhill, Alexandria, Dunbartonshire G83 9LQ.

■ Will swop *Match Day* for *Skool Daze* and *Booty*. Will also swop *Pole Position* for *Soft Aid* and *Finders Keepers*. Tel. Warrington 814286 and ask for Andrew.

■ Swop *Doomdark's Revenge* for *Psytron* or one of *Sabrewulf, Splat, Codename Mat, Cookie* for one of *Underwurlde, Starion, Shadowfire, Skool Daze*. Tel. (0924) 451450 and ask for Darren.

■ Will swop any two of *Skool Daze, TLL, Beach-Head, Trashman, Finders Keepers* for any one of *Tapper, Cauldron, Brian Bloodaxe, Ghostbusters, Hunchback*, etc. Tel. (0766) 3035 and ask for Tony Tipton.

■ Swop my ZX81 games for any good, working Spectrum games. Please help, I can't get rid of them! Tel. (025481) 2210 and ask for Robert until 10th September.

■ Software to swop. Send your list for mine. Reply guaranteed. Many recent titles. Please write to J McMullen, 8 Woodview, Pinecroft, Grange, Cork, N Ireland.

■ Have *Finance Manager, Machine Code Test Tool, Cyrus IS Chess*. Will swop for *MF Print, Tasmerge, Tasprint* or *Omnicalc 2*. Tel. (0970) 828196 and ask for Alwyn after 6pm.

■ Swop *Make-A-Chip, Avalon, Survival, Scrabble, WTHAS, Chess, Horace Goes Skiing, Chequered Flag*, any two for *Automania, Bruce Lee*, etc. Tel. (0851) 82338 and ask for Norman.

■ Will swop *Manic Miner, Booty, Chuckie Egg* and the *Castle* for *Pyjamarama, Raid Over Moscow, Dragontorc* or *Daley's Super Test*. Write to Gareth Morgan, 68 Hereford Road, Monmouth, Gwent NP5 3HJ.

■ Swop *White Lightning, TLL, Dictator, Cookie, Stonkers, Zip Zap, Redweed, Formula One* for Kempston Interface and joystick. Tel. Silver End 83166 and ask for Ben (after 6.30pm.)

■ I have software to swop — over 500 titles. Your list for mine, send to Chris Jones, 23 Greaves Close, Appley Bridge, Nr Wigan, Lancashire.

■ *HURG, Quill, Melbourne Draw, Knightlore, Cyras* plus almost 100 games. Send sae plus your list for swops to Mark Fox, 19 Athens Drive, Walkden, Worsley Manchester M28 5DD.

■ Swop *White Lightning, Dungeon Builder* or *Great Space Race* for *The Quill, Valkyrie 17* or *Tir Na Nog*. Johnny Chiu, 57 Dunbridge House, 4/Fl. Highcliffe Drive, Roehampton SW15 4QD.

■ Spectrum software, brand new — all originals. Send sae to Spencer Planton, Pilgrims School, Firle Road, Seaford, Sussex.

■ Software to swop — top titles available. List & sae to Glen Morton, 14 Homestead Close, Shiregreen, Sheffield S5 0NE.

■ Swop software — over 200 titles to swop. Write to Nick Blow, 47 Oakwood Road, Bricket Wood, St Albans, AL2 3PZ.

■ I would like to swop *Horace Goes Skiing, Make-a-Chip* and *Survival*. Any offers? Write to Nichola Milligan, 27 Trafalgar Terrace, Scarboro', North Yorks. YO12 7QG.

■ Swop *White Lightning, American Football, Daley Thompson's Decathlon, Football Manager, ZX Draughts* and *Ceasar the Cat* for any Hisoft program, or *The Artist*. Tel. (0977) 610168 and ask for John.

■ Swop *Spy vs Spy, Nodes Of Yesod, Chuckie Egg II*, etc, for any latest games (not adventures). Write to Ian Jakeman, 45 Welbeck Road, South Harrow, Middlesex HA2 0RP.

■ I have *Vu-File+ Cash Controller*, will swop for Masterfile. Tel. 061-748 7822 and ask for Mr Garside.

■ Swop two of the following originals for *White Lightning* and manual, *Cyclone, Booty, Chiller, Iraxx, Star Searcher*. Write to D.P. Guthrie, 4 County Houses, Easter Kintrae, Elgin, Moray, Scotland IV30 2PX.

HARDWARE

■ Spectrum 48K Fuller keyboard, Interface 1, 2 microdrives, ZX printer, £200 worth of software, and Kempston joystick. Offers around £200. Tel. 690351 and ask for Mr N A Cleveland.

■ Spectrum+, Alphacom 32 printer, cassette recorder, Zeus Assembler, monitor, Disassembler, *Spectrum ROM Disassembly* book, over £300 worth of software, books and mags. All for £170. Tel. (0270) 664638 and ask for James.

■ Currah MicroSpeech unit, demo tape and instructions £20. Tel. 045-822 3369 and ask for Rob.

■ Prism VTX5000 modem, complete and unused. £30 or swop for Nidd Valley/Cambridge joystick and programmable interface. Tel. Stanton, Suffolk 50352 (after 7pm) and ask for J R Penley Martin.

■ ZX81 for sale plus new Memotech keyboard and Artic *Toolkit* and *Galaxy Jailbreak*. £45 ono. Tel. (0382) 77391 and ask for Henk.

■ 48K Spectrum Saga 1 keyboard, Dk'Troniks Interface and Quickshot II, plus tape recorder and £150 worth of software. Will sell all for £195 ono. Tel. 031-665 5590 and ask for Nicholas.

■ Spectrum+, nearly new, C/W, joystick interface, recorder, loads of games and mags. All perfect condition. Tel. (0202) 887480 (after 6pm) and ask for Andrew.

■ For sale, Sanyo 12" green screen monitor. Cost £80, asking £50 or will swop for a VTX5000 modem. Tel. (0443) 820617 and ask for W. Smith.

■ Swop Cheetah Rat Infra-Red joystick and Interface for Quickshot or Wilco Joystick and Interface or sell for £20. Tel. 01-341 3355 and ask for Niall.

■ Dk'Tronics Light Pen and accessories. Swop for software — new releases, decent stuff — games preferred. Will sell for £15, or swop. Tel. (0952) 592865 and ask for Phil.

■ Spectrum rubber keyboard for sale or swop. Tel. (0294) 68141, ask for Bill and make me an offer (*S'pose that's one idea for this month's compo! Ed*).

■ Linguistic Spectrum needed. Wish to swop *TLL, Go To Jail, Mugsy, Jack And The Beanstalk, Laser Zone* for Currah MicroSpeech with instructions. Write to Simon Alexander, 6 Villiers Crescent, Eccleston, St Helens, Merseyside.

■ For Sale — QL and monitor (Hardly used!), includes all accessories. In excellent condition, worth £560, but will sell for £400 only! Tel- 01-672 3490 and ask for Zahid (from 7-9 pm).

■ For sale — Stonechip Programmable joystick interface for Spectrum (with guarantee) and Quickshot joystick £20. Tel. (0874) 3952 and ask for Mr Davies after 4 pm.

■ Will swop *Snooker, Ghostbusters, Zip Zap, Orbiter, Fall Guy* for Kempston pro joystick + interface. Also software for software. Write to M Davidson, PL 5183, 45900 Ljungskile, Sweden.

■ Rotronics Wafadrive for 48K Spectrum — Includes Spectral Writer word processor. Brand new — unused. Worth £129, accept £115 ono. Tel. (0970) 828196 after 6 pm.

■ Downsway programmable interface selling for £19. Contact Mr R Hay, 13 Queensberry Avenue, Bearsden, Glasgow G61 3LR.

■ Microdrive for sale. Good condition £35 including postage in UK. Tel. (0277) 232092 and ask for Phil.

■ Downsway programmable joystick interface in good condition. Cost £24 will sell for £12. Tel. (0277) 232092 and ask for Phil.

■ Wanted multi-function interface. 8 bit ADC/DAC 16 Bit P10. Will exchange for ZX interface 1, only 1 month old. Sell for £25. Tel. Wishaw 357444 and ask for Gordon.

■ Wanted an Alphacom or ZX printer with paper. Swop for £90 worth of software including *The Quill, Tir Na Nog, Starstrike*. Also wanted, *Doomsdark's Revenge*. Swop for *Lords of Time*. Write to T William's, 91 Brittain Drive, Grantham, Lincs NE31 9JZ.

■ Spectrum+ under guarantee with WH Smith data recorder, joystick with interface, software and books. All worth over £350. Will sell for £200. Tel. Towcester 50694 and ask for Joe.

■ Currah MicroSpeech and modified joystick interface plus various games. Will exchange for dk Troniks sound synth and/or RAM turbo joystick interface. Write to Steven Taylor, 1 Churchill Road, Castletown, Thurso, Caithness, KW14 8UW.

■ 48K Spectrum joystick ZX printer, Dk Troniks keyboard £125. Tel. (0227) 360838 and ask for Mr A Rowe.

WANTED

■ Wanted, Commodore 64. Will swop Rubber Keyboard Spectrum with Interface and programmable joystick Interface. Tel. (0273) 202545 and ask for Noah.

■ Wanted! Composite colour monitor. Reward £90 ono, or composite amber monitor, reward £45 ono. Write to Phil Grossman, 13 Friary Close, Kirkman, Lancs, PR4 2XH.

■ Wanted *Pole Position* and *Eights* swop for *Softaid, Starion, Matchday, Spy Hunter, Bruce Lee*. Any two, also swop the *Dark Tower* electronic game for Turbo interface. Write to M Smith, 20 Pinewood Avenue, Flanshaw, Wakefield, Yorks, WE2 9JR.

■ Wanted ZX printer. Will swop for Currah MicroSpeech and any three of *Decathlon, Match Point, Night Flight, Sabrewulf, Full Throttle* and many others. Tel. (0843) 593002 and ask for Peter.

■ Wanted Slomo. Got *White Lightning* plus *Rapscallion* or *Ground Attack* or *Meteor Storm* or *Megapede* or *Aquarius*. Tel. 01-460 0782 and ask for Michael.

■ 48K Spectrum+, Dk'tronics interface and sure shot joystick, cassette recorder and 25 games including *Spy Hunter, Starion* and *Falcon Patrol II*. £175 ono. Tel. Sutton, Surrey 647 7784.

■ Interface one and Microdrive plus fifteen cartridges paced with all latest software including *Doomdark, Match Point, Knightlore, Underwurlde*. For full details send sae to C Hobson, 12 Maple Drive, Burgess Hill, W Sussex.

■ Latest software for swops. Also *YS 4* and 6 to best offer. Tel. 061-339 5436 and ask for Roy.

■ Kempston Joystick and interface, brand new £15. Tel. Lhanbryde 2570 as soon as possible, and ask for Malcolm.

■ Wanted, *Urban Upstart*. Will swop for one of the following, *Fred, Mrs Mopp, Pyjamarama* or *Automania*. Tel. (0236) 33734 and ask for Frazer.

■ Offers for any issues of *YS* 1-18. Ditto *Crash* 1-19. Write to John Hawkins, Flat 1, 12 Byne Road, Sydenham, London SE26 5JRE.

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■ Wanted, Light Pen. Will swop Hisoft Devpac, *Space Raiders, Digger Dan.* Write to Dave Atkinson, 76 Hall Park Avenue, Horsforth, Leeds LS18 5LU.

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■ ZX81, complete and working. £20 ono. Tel. Oxford 511500, and ask for S. Barber.

■ Wanted issue 2 of *YS.* Will pay £5 for a good copy. Write to Mike Morrissey, 86 Ashton Court, Newland Road, Leamington Spa, CV32 7PX.

■ Wanted, any magazines or posters with maps of *Underwurlde* and/or *Knightlore*, eg *YS* issue 11. Will pay above purchase price. Tel. (0484) 23234 and ask for Ian.

■ Urgently needed! Datel sound sampler. Will sw.op for software and money. I have *Hunchback II, Finders Keepers,* etc. Tel. (06065) 53648 and ask for Mike.

■ Wanted, *Basketball, Baseball, Squash* or other sports games. Write to R. Reitsema, Populieren 28, Bedam, Holland 9781 MJ.

■ Help! Local club requires printer. Must be able to screen dump! Will swop for six pack and small cash sum. Send letter to PRO LADAS, 22a, Newnham Road, Lillington, L/5PA, Waks. CV32 75N.

■ Urgent! Daisy Wheel printer needed. Will pay £170. Also Light Pen wanted. Will give *Decathlon, Hunchback, Pole Position, Skool Daze* and more. Tel. (0373) 202545 and ask for N. Nicholson.

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■ Wanted, machine code tips to use in own programs. Listings are also welcome. Send to Walter Krythe, Bercoperweg 6, Makkinga, New Zealand 0423 TS.

■ Wanted, ZX printer. Will pay £10. Tel. Steeple Claydon 8880 and ask for Daryl.

■ Any machine code boors. Will swop *Trashman, Antics, Frank'N'Stein,* or pay up to £3. Write to Robert Squirrell, 12 Overdale, Dorking, Surrey, RH5 4BS.

■ Wanted, VTX5000 modem. Swop for Currah MicroSpeech plus Ferguson data recorder, and *Tasword II,* and *Supercop 2.* Tel. (00246) 206446 and ask for Mike.

■ Wanted, issues 2,3,4,6 and 7 of *YS.* Name your price, or swop for Dk'troniks Light Pen, software or Rainbow programmable interface. Tel. (04024) 70148 and ask for Kier Macree. & cash for Interface 1 and Microdrive. Tel. (0904) and ask for Joe.

■ Wanted ZX printer with roll of paper of Modem and *Ghostbusters,* or *Raid Over Moscow* for Merlin. Please write to Alex Stivaros, 31 Broad Oak Lane, East Didsbury, Manchester, Lancs M20 0QB.

■ Where for art thou *Robotron*? If anyone has this game or knows where to obtain it, please contact John Flynn. Tel. 021-475 4535 and ask for John.

■ Wanted Floyd 40 or alphacom printer with paper. Will swop for *The Illustrator, The Quill, Classic Adventure, Espionage Island* and *Castle Blackstar.* Write to Gary Lodge, 53 Cringles Drive, Tarbock, Prescot, Merseyside L35 1RD.

■ A pleas for help! Does anyone have *Pi-eyed* or *Pi-mania* by Automata. If you do then ring (0867) 73269 and ask for Graham.

■ Wanted, machine code tips to use in own programs. Listings are also welcome. Send to Walter Krythe, Bercoperweg 6, Makkinga New Zealand 0423 TS.

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»PEN PALS

■ Speccy owner (14) seeks male or female Speccy owner of about same age to swop software etc. Write to Neil Christie, 72 West Road, Fraserburgh, Aberdeenshire AB4 5NE.

■ Male or female pen pal required. 12+. Would like to swop games and POKEs, etc Mainly arcade games. Andrew Gee, 21 Rowley Drive, Lepton, Huddersfield, W. Yorks.

■ Scottish lad would like to contact anybody who likes machine code, games, hacking, drawing computer graphics and being deft. Michael Bell, 91 Machine Place, Dunfermune, Fife, Scotland.

■ Mad Spectrum user well into very loud H M music, Iron Maiden, etc. I luv nasty movies and loud proud video games. Would prefer another user of opposite gender! Rock on! Simon Lindsell, 17 Brooke Avenue, Garlinge, Margate, Kent CT9 5NG.

■ 13-15 year old pen pal wanted to swop program ideas, playing tips, etc. Jonas Blom, Hallen 3050, S83060 Föllinge, Sweden.

■ Overseas pen pals wanted for general correspondence, preferably in the 13-16 years age group. Lee Cooper, 33 Mill Lane, Romsey, Hants SO5 8EW.

■ Hi! Lonely 15 year old lad would like to hear from any girls, any age, into music, comps and most other things. Write to Ian Porter, 4 Bramhill Road, Skelmersdale, Lancs WN8 8RW.

■ Pen pal wanted, any age, to swop hints, tips or ideas for games. Write to Graham Duke, 28 Beech Road, Sowebry Bridge, W. Yorks. HX6 2LR.

■ Geriatric Speccy basher, (30) not too experienced with computers wants to share hints and tips with anyone, anywhere. Tape or letters to Dave Burns, 10 Buttington Road, Monkmoor, Shrewsbury, Shrops.

■ Male pen pal wanted, age 11-13. Must be interested in computing and preferably have the hang of Basic but be bewildered by machine code! Write to Gordon Machechnie, 26 Rose Crescent, Perth, Scotland PH1 1NS.

■ Pen pal wanted. Somebody good at hacking and who can give help with machine code. Aged 25+. Write to Charles Chrisp, 21 Waskerley Road, Barmston, Washington, Tyne & Wear NE38 8EW.

■ Pen pal wanted to swop software, ideas etc. I've got heaps of software to swop. Age 14-15. Write to Andrew Chambers 4/547 Victoria Road, Ryde 2112 Sydney, NSW, Australia.

■ I'm 15 and into rock and heavy metal. Can swop copies of albums and Spectrum games. Large range available. Write to Carl Hunt, 9 Matthews Way, Oakley, Basingstoke, Hants. RG23 7DQ.

■ I would like a penpal to swop games, hints and tips. Write to Hakan Bergstrom, Urbergsgartan 66, 60356 Norrkoping, Sweden.

■ New Spectrum+ owner would like to hear from anyone 20+ interested in adventure games, war games and music. Please write to Tina Webb, 61 Franklin Street, Scarborough, N Yorks YO12 7JU.

■ Left-wing intelligent male into varying types of music and Speccies (16) wants similarly biased female penpal of same age. Write to Veg Evans, 42 Fore Street, Bugle, St. Austell, Cornwall PL26 8PE.

■ Are you an attractive girl who's an addictive Speccy games player? If you are aged 18-22 and live in Bristol write to Chris Gardner, Highfield Farm, London Road, Wick Bristol BS15 5QZ.

■ I am 14 years old and would like to swop software (mostly adventures). Write to Colin Curwen, 23 Andrew Street, Walton Liverpool 4 4DS.

»MESSAGES

■ *YS* issues for sale. Nos 2,3 and 4 £2 each. Nos 8-12, 13-16 50p each. Also the *Complete Home Computer Course* £8. *Advanced Course* £15. Tel. 01-773 1543 and ask for Joseph.

■ Would Clive Precious please contact BJ as soon as possible as I've lost your address like a total wally! Please write to BJ, 109 Hilton Road, Aberdeen AB2 2HY.

■ Sinclair amateur radio user group welcomes all licensed and SWL HAM radio users. Worldwide membership, 16 page newsletter. Send sae to Vital Sarug, 3 Redhouse Lane, Leiston, Suffolk IP16 4JZ.

■ Swop for issues 1-12 of *YS.* I have *Alchemist, Zzoom* and *Valhalla.* Write to Richard Heaton, The Old School, Carsluith, Wigtownshire DG8 7JR.

■ Can anyone design adventures? Programmers will code them into machine code, (not using *Quill*), with interactive characters, illustrator-style graphics (but 8 times faster). Please Tel. (0946) 820 026 and ask for Tony.

■ Interested in a serious Spectrum group? Hardware and Software development, modem communication, etc. Write to Steve, 28 Hartington Terrace, Bradford, W. Yorks. BD7 2HW. Sae please!

■ Help! Has anyone got any tips for getting out of the house in *Dennis through the Drinking Glass*? Tel. Saxthorpe 813 and ask for Robert.

■ Running a business? Need a program? Call me for custom-written Spectrum software. Estimates given. You only pay when you are satisfied. Tel. Matthew Brownbill (0785) 74314 after 4 pm.

■ Stuck in *Everyone's A Wally* or *Pyjamarama*? Phone the experts, I'll answer all questions. Tel. (0236) 33734 and ask for Frazer after 6 pm.

■ I live in Kuwait (Arabian Gulf) and there are no user groups in this area. I've got a 48K Spectrum. Write to Mohit Mahendra, PO Box 9116, Ahmadi, Kuwait.

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HACK FREE ZONE

Ger-reat! A big hand for our child of the computer age,* Hex Loader *who's commandeered the column that beats the cheats. Over to you, Hex . . .

Hi there! Hex Loader, here, and have I got some tips for You-hoo! Having trouble with a megagame? Well, you're looking at the man who can help. I have the technology . . . No, scratch that . . . I *am* the technology! All accusations of egomania aside, I am, after all, computer generated, so it only follows that I should know what goes on inside my silicon-based buddies. Am I right? Or am I right?

OK, so bragging without proof is like toad-in-the-hole without sausage, so here we go with this month's postbag.

Everybody who's anybody is playing Ultimate's **Knightlore.** With good reason, it's a superlative game. The basic principle of the game being to put the Seven Charms into the Wizard's Cauldoron, *in order:*
Bottle, Sphere, Chalice,
Bottle, Diamond, Sphere,
Poison, Boot, Cup, Diamond,
Poison, Boot, Chalice, Cup.

As **Simon Robinson** of Enfield tells me, "The list would be better drawn in a circle, as the first object required may be any one of them. Once you know your position in the list, you can proceed with confidence."

Simon also sent me a map of the game. Admirable patience, there, my old chutney, but unfortunately I don't have the space to print it. I would far prefer that if any of you people have any tips, you write them out rather than draw them. Small diagrams, yes. Annotated screens, yippee! Lunking great reams of tightly drawn maps, *no.* That kind of thing makes my optical pickups hurt.

Now the first of many tips for Gargoyle Games' *Dun Darach.* This quick starter comes from **P. Bradford** of Nottingham, who tells me, "Go to the casino and make some money." Easy? Yep! All you do is take your 2000 iridi into the casino, and then Save the game! Then, place your bet on the 2-1 table; if you lose the bet, all you do is reload the saved position and replace your bet until you win. But that's almost cheating . . . and you know what I think of that! Just this once though — now go to the bank and deposit most of the money, avoiding pickpockets.

Go to the Thieves' Guild and buy a licence for 10,000 iridi. Keep the asterisk on the licence to avoid being 'mugged'. Go to the Minstrel at 10 Old Hill, and buy a lyre for 1,000 iridi. When you meet Dain, behind the invisible door on Park Row, give him the lyre, and he will give you the shield. Take the shield to 'Hail Midir' at 35 Marsh Street, drop it on the altar, and pick up the M-key. You can use this to let you through the invisible door on Cross Street, opposite number 55, and obtain the Tele-stone. Go to the Strong Room at 1 North Wall, and get the pearl. Once outside the Strong Room, the licence can be discarded. To avoid mugging, though, put the asterisk against the Tele-stone.

What you do now, and where you go to finish the game, I'll tell you next time. *Dun Darach* is such a complex adventure, it can't be thrown into such a small space as this, so I guess I'll be featuring it for some months to come.

Jerry Tattum of Rowlands Gill, Tyne and Wear has a few terse comments about *Avalon.* "Assuming you have found the route out of the Gatehoue level, here are a few things to bear in mind.

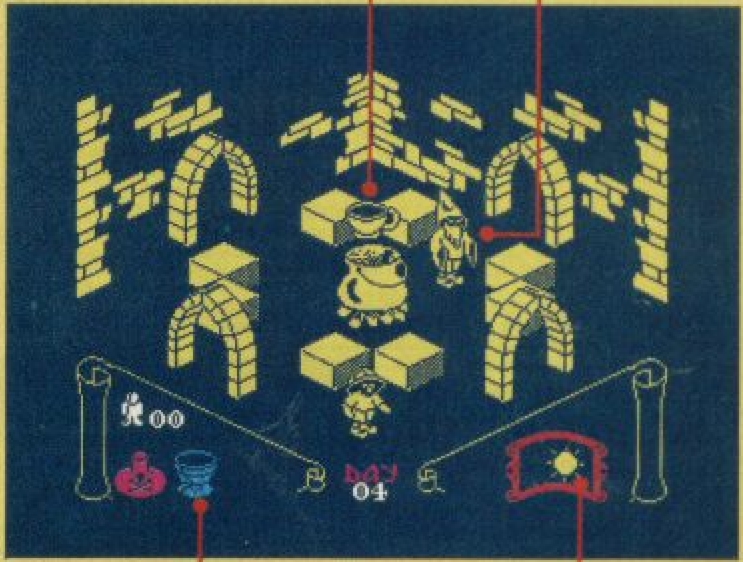
"Don't touch the walls in the tunnel, as they waste energy. Don't waste the Energise spells. Search for the Free Energy Point when you get to a new level, you *need* to know where it is. The sword Caliburn is an essential piece of equipment, although tricky because you can't see it! Don't use Caliburn on the other wizards, you'll lose it. If you can't zap a wizard, try giving him something. Finally, if it moves, *kill it!*"

That's it, time to Log Out, and still not a POKE in sight. See you next month, and keep those letters coming to Hex Loader, Hack Free Zone, *Your Spectrum,* 14 Rathbone Place, London W1P 1DE. Oh, yeah and another thing . . . (*click, bzzzzzzzzz*)

KNIGHT WORK IF YOU CAN GET IT

Remember the charms must go into the pot in the right order. To find out which one you need first you'll just have to trundle off to the wizard's lair at the start. The object you need flashes on and off above the cauldron.

Don't mess with the wizard, chum. He may look charming as he toddles off round the pot but touch him and you'll wave farewell to another life.



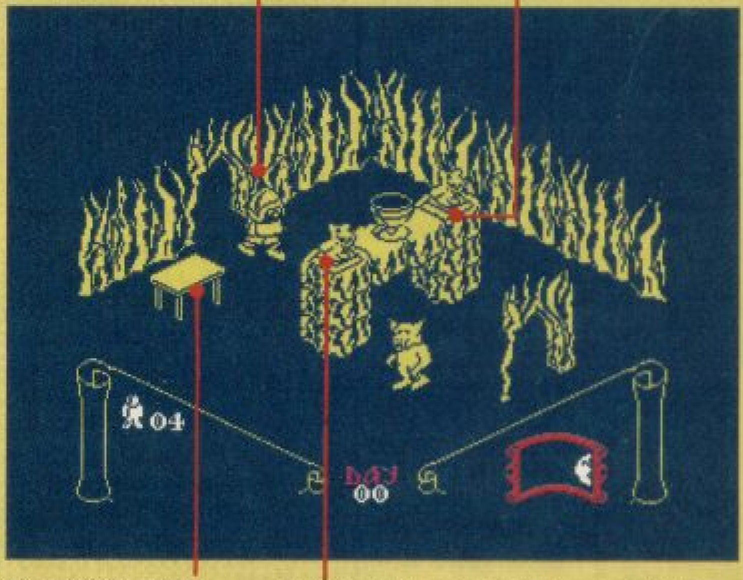
Try this tip. As objects are only accepted in the right order, it's an idea to collect as many as possible and then drop them in the adjoining rooms. Then nip into the den and with luck the charm you need will be close at hand.

Only when the sun's shining will the wizard let you add ingredients to the pot. At full moon, when you've adopted your lycanthropic persona — that's a flash way of saying you've turned into a wolf — the sparkler in the cauldron tries to beat the living daylights out of you. Give yourself plenty of time and avoid the room if the sun's just setting . . .

LAYING DOWN THE LORE

Like all good sentries, this one sticks to his appointed path — backwards and forwards from door to door. The only way you'll get him to deviate is to push the table in his way to collect the object. Don't worry, he's a bit weedy and will only jolt the table not shove it to one side.

You don't have to use the table to reach the top of the arch — drop an object so that you're standing on it, then press jump and pick at the same time. This is a good tip for getting over all sorts of obstacles that at first seem insurmountable.



You'll have to use this table if you want to get on top of the situation. Push it over to the arch and use it as a half-way stage to jumping up to the charm.

Don't touch the ornaments! They may look like harmless wolves heads but they're as deadly as the real thing. All over the castle you'll find inanimate objects have got it in for you.

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